The Builder.

VOL. XXX.—No. 1513.

The Rude Stone Monuments of all Countries.

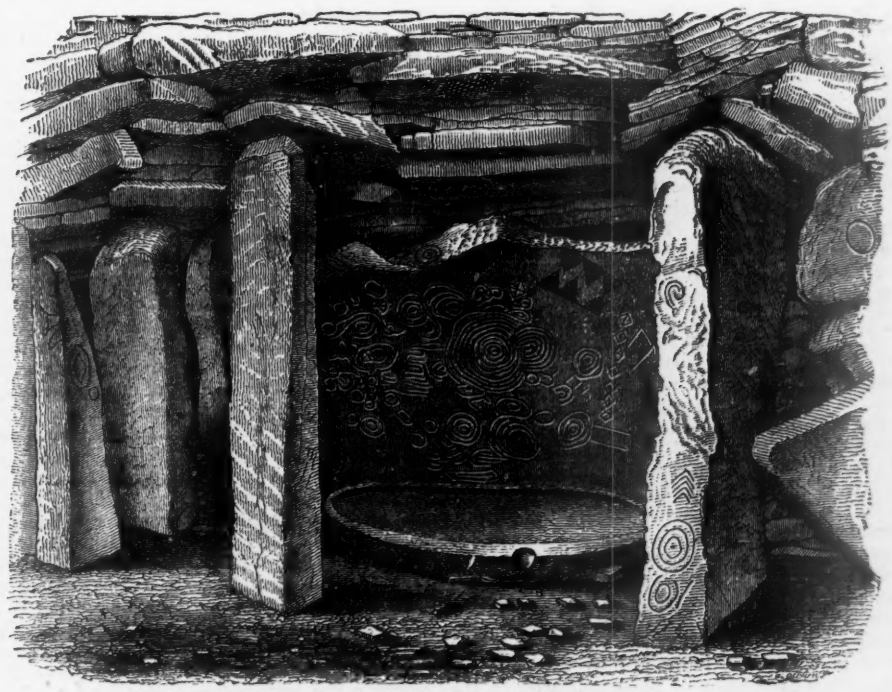
IT is something new to see Stonehenge and monuments composed of unhewn stones regarded as specimens of a style of architecture, divided into periods, and credited with architects. Hitherto, antiquaries have looked upon untooled monuments as mainly pre-architectural and possibly pre-historic. But Mr. James Fergusson has now elaborated an idea, slightly outlined by him about ten years ago, and, in a copiously illustrated work on "Rude Stone Monuments," endeavours to draw these wonderful relics within the confines of architecture and history, and arrange them in a sequence.* His creed is that all groups of untooled stone are comparatively modern; and that those of the East, especially, are very late attempts to imitate ancient magnificence.

Our own great circles of unhewn stones he attributes to King Arthur. Their use or meaning has been a puzzle to antiquaries for centuries. Many conjectures have been made, from the days of Tudor and Stuart archæologists to our own, concerning them, but these are all folded up and neatly shelved by Mr. Fergusson, who insists that these monuments are trophies raised on the battle-field in the strong hour of victory. With a victorious army on the spot, it would have been easy to raise a monument of this kind in a week, he urges; and then he proceeds to identify the sites of several of our largest circles with Arthur's famous battles. Curiously, from want of knowledge of the locality, probably, he is inclined to shift the site of the first battle from the glen mentioned in the old writings into Dumfriesshire, near Lochmaben, where there happens to be a circular inclosure corresponding in particulars with that at Penrith, known as Arthur's Round Table. But Northumbrian antiquaries boast that there are few districts in the United Kingdom so rich in ancient camps, fortlets, incised rocks, cultivated terraces, and other signs of an early and numerous population as that through which the Glen flows; and, consequently, as the army was composed of the population in those days, none more likely to have been the scene of a great gathering in momentous times. The sites of the second, third, and fourth battles are unidentified, but the fifth is thought likely to be represented by one of the Cumberland circles, near Penrith; the sixth is associated with remains at Bas Lowe, in Derbyshire; the seventh with the Salkeld circle, or else with the Grey Yawds, near Cumrew; the eighth is laid in Wales, from its Welsh name, Guin; the ninth is thought likely to have been Caerleon, in South Wales; the tenth, on the River Ribroit, is unidentified; the eleventh is supposed to have been at Stanton Drew, where stands a set of monoliths so impressive as to be chosen by Mr. Fergusson for the frontispiece of his work, and which we are enabled to reproduce; and the twelfth is represented by the great circles and lines of huge stones at Avebury. It is said of many things that they are too good to be true; and this association of our most mysterious monuments with our most mythical monarch is so delightful that we are afraid it must be another of those superlatively good fictions.

Before going further into the author's array of facts brought forward in support of his view of the recent date of rude monuments, we would throw out the hint that, without including the mention of the circular temple by Diodorus, some of the old Greek legends seem to indicate the presence of huge stones in artificial groups at a period prior to the writings of the Greek poets. Whosoever looked upon the head of Medusa, for instance, is said to have been changed into stone. As Perseus travelled homewards with it, he is recorded to have turned a whole army into stones by exposing it to view; and when he arrived at the court of Polydectes, he only held it up before the eyes of that monarch and his scoffing courtiers and they were instantly changed into stones. Could it be shown that there are, in Greece, circles and groups of stones similar to those of which Mr. Fergusson treats, we should have to consider whether or not it was their presence that dictated such fables to the poets. If we found there was a circle of stones in the island of Sirephos, where Polydectes kept his court, and rows, or groups, either drawn up in battle array or scattered in apparent confusion, on the spot associated with the rescue of Andromeda, and the subsequent battle with her suitor Phineus, should we not have grounds for believing that the legends were adapted to these relics? If these rude stones were known to the builders of the polished stone buildings of ancient Greece, the theory of their recent date must fall to the ground.

We would, too, remove a misconception concerning the absence of circles in Wales. Mr. Fergusson assumes there are none either in Anglesey or in any other part of the Principality, although there are many dolmens. We refer to the work of the Rev. Henry Rowlands, entitled "Mona Antiqua Restaurata, 1766," and find he illustrates the remains of a stone circle in the township of Tre'r Dryw, Anglesey, and mentions a finer one of forty-two stones as situated between two mountains near Cesail Gyfarch, in Carnarvonshire. And this painstaking author wrote of Anglesey, "There are also up and down many remains of pillars and erected columns in all these precincts; some single and some ranged in circles; most of them broken and cast down." Furthermore, he endeavoured to ascertain whether there were any particular traditions attached to them by the simple Welsh people, and could find none but what was represented by their familiar name, Arthur's Quoits. This last fact is especially worthy of note, because a similar term popularly applied to another group of rude remains, at Gower, near Swansea, assists Mr. Fergusson to settle the site of one of Arthur's battles.

With regard to Stonehenge, we are assured there is no reason to doubt the truth of the statement of Geoffrey of Monmouth. This Mediæval scribe distinctly states that Ambrosius erected Stonehenge in memory of the three hundred British nobles who were treacherously slain by Hengist when partaking of his banquet at Amesbury. If, deplores Mr. Fergusson, he had been content with this unvarnished statement, no one would ever have doubted it; but, unfortunately, he embellished it, by adding that the great magician Merlin brought the stones from Ireland. This flight of fancy cast a doubt upon the whole narrative; but it need not have done so, for we have only to read that some of the stones were transported from Ireland, without the aid of magic, instead of by that agency, and all is clear. As is well known, some of the stones belong to rocks that are not found in Great Britain, but are common in Ireland, and the transport of these rarer blocks from that country may have been the foundation of Geoffrey's report. Mr. Fergusson thinks that though the native style fell into abeyance during the Roman occupation, it still flourished in Ireland, and was selected by Ambrosius, or recommended to him by Merlin, as most suitable for the national memorial of the three hundred nobles. Following Geoffrey still further,



CELL IN CAIRN, AT LOUGH CREW.

* Rude Stone Monuments in all Countries: their Age and Uses. By James Fergusson, D.C.L., F.R.S., &c. London: John Murray. 1872.

he suggests that the pairs of blue stones within the choir were placed there to the memory of Aurelius and Constantine, who are said by that historian to have been buried within "the structure of stones which was set up with wonderful art, not far from Salisbury, and called in the English tongue Stonehenge." In effect, he bids adieu to the temple and tribunal theories, and to the Druidical serpent idea, and proclaims the erection of this Giants' Dance, as it has been figuratively called in old times, to have commenced in the year 466, and concluded in 470 A.D. It is, he declares, the most effective example of megalithic art ever executed by man. "The Egyptians and Romans raised larger stones, but they destroyed their grandeur by ornament, or by their accompaniments; but these simple square masses on Salisbury Plain are still unrivalled for magnificence in their own peculiar style."

We have said that Mr. Fergusson arranges the various kinds of rude stone monuments into a sequence. He begins with the kist, or kist-vaen, found in sepulchral tumuli, as his first "period." The buried chamber for several interments is the first step forward. As such a structure could not be externally completed till all the intended burials were made in it, considerable delay must have occurred in some instances, and the next step would suggest itself as a remedy for this inconvenience. This is the external entrance piercing one side of a tumulus to communicate with the central chamber. So far so good, doubtless.

We next find him setting out as a fact that the buried chamber, when composed of large unhewn stones, was the predecessor of the open or free dolmen, or cromlech. The next step to leaving them uncovered was to elevate them on the summits of tumuli. Some writers have supposed that all the dolmens we now see uncovered were once buried, and are only now exposed to view because the mounds of earth have been removed. This supposition Mr. Fergusson holds as improbable, and even impossible; for, he urges, the supports of the capstones are not sufficiently close to have prevented the earth falling into the central chamber, in the course of the formation of the mound over it. The capstone of the dolmen at Pentre Ifan, in Pembrokeshire, is large enough, and sufficiently high from the ground, to admit of four or five persons on horseback taking shelter under it. It is not likely, he argues, that any men would take the trouble to hoist this stone on to its supports merely to hide it again directly under a tumulus; for a stone one-third or one-fourth its weight would have answered the purpose of a roofing-stone equally well. But, he continues, "the mode of architectural expression which these stone-men best understood was the power of mass. At Stonehenge, at Avebury, and everywhere, as here, they sought to give dignity and expression by using the largest blocks they could transport or raise; and they were right; for, in spite of their rudeness, they impress us now; but had they buried them in mounds, they neither would have impressed us nor their contemporaries." It will be seen that the term "stone-men" here used is not to be taken in connexion with the archæological divisions of stone, bronze, and iron, for which, indeed, he shows but cold appreciation. After the rude stone-monument builders had raised their dolmens to the top of their tumuli, their progress is not so easy to trace. But that the circle is one of the latest forms of rude stone architecture seems to him certain. The demi-dolmen also appears to be a late and economical invention.

In comparing Eastern with Western dolmens, Mr. Fergusson finds what he considers to be unmistakable proofs of a common source. In Asia, as in Europe, the same successive forms of burial are indicated,—the kist, the chambered tumulus, the elevation of the kist on to the top of the tumulus in the open air, and, finally, the formation of the circular hole in one of the slabs of it. In the most ornate of Indian tombs, this parentage is pointed out. The rails round it represent the circle of stones round the rude monument; the domed tomb is the tumulus; and the tee on the top of it is the elevated external kist-vaen. In the case of the Lanka Ramayana Dagoba, of which a view is given, there is, moreover, unnoticed by him, another mysterious association of ideas indicated in the presence of a series of concentric circles on the side of the tee shown. "That a people might both bury in barrows and erect domical cairns to contain relics, would not necessarily involve a proof of the one form being copied from the other; but that both should be surmounted by a simulated sarcophagus or shrine, and both surrounded by one, two, or three rows of useless stones, points to a direct imitation of the one from the other which can hardly be accidental," presses the author. Many would suppose that the ornamental tomb is the development of the rude monument formed of unhewn stones; but he has arrived at exactly the opposite conclusion, as we remarked at the outset. Wood being the earliest building vehicle in India, and having regard to the curiously attenuated pillars of this particular monument, he considers that the Lanka Ramayana Dagoba is an adaptation in stone of forms previously wrought in wood, and that the unhewn-stone monuments are but rude and late attempts to copy these early efforts in polished stone; and as it is allowed that no hewn stone buildings were erected in India before the year 250 B.C., the date of the rude stone monuments must be placed a long time after this period,—probably as much as five or ten centuries. There has been no break, he believes, in this manner of building from the time it was commenced till the present day.

An interesting feature in the work is a map, illustrating the distribution of dolmens, and showing the probable lines of migration by the dolmen builders. India, and Syria, and the Circassian coast of the Black Sea, are the chief seats of these relics in Asia, as far as our present information goes. But as the thousands now observed in North Africa were unknown to us twelve years ago, we are justified in assuming that there may yet be discoveries of more in other localities. Italy and Greece are still unexplored, for we may take the solitary dot in each country as evidence of this fact rather than of the absence of dolmens. The south, west, and northern coasts of Spain, show an almost uninterrupted chain of them, the Andalusian coast being the only gap. One of the lines of migration stretches from the African coast to Granada, across the Mediterranean; and another line shows a communication between Africa and France, the chief dolmen country. From Spain, Mr. Fergusson gives two more lines of migration northwards, the one landing upon the south coast of Ireland, to account for the mysterious connexion of the Irish Milesians with Spain, and the other sailing along the west coast, touching at two points, till it was met by a line coming from the Orkney Islands and Norway. From France he shows two short lines crossing the English Channel to land in Cornwall and Devonshire. Kent and York were reached by emigrants from Holland and Hanover; and Northumberland was gained by an independent migration from Sweden and Jutland. Central Europe has yielded only occasional traces of dolmen builders up to the present date.

Every one really under the influence of the attraction of these enigmatical remains of an unrecognised people will look through Mr. Fergusson's labours with pleasure, although, as he is the first to admit, and we fully believe, he may not have found the right clue to the mystery of the subject. His impression is that the dolmens, like the circles, all belong to a period subsequent to the commencement of the Christian era, and he shows what he thinks some very good reasons for assigning them this late date. Mr. Baker's account of a cromlech-building Indian tribe, which still continues to bury in cromlechs, is one of the strongest arguments that could be urged, though by no means conclusive. The presence of a dolmen in the centre of the courtyard of a ruined Sivite temple, at Iwollee, in Dharwar, of which a view is given, again speaks for their modern erection, for it is difficult to believe that the Sivite priests would have sanctioned the erection of a temple close to a tomb belonging to a dispersed tribe; and as their building is a thirteenth or fourteenth century edifice, it follows that this particular dolmen must be late indeed if erected there after the temple had been ruined.

A still more striking reason for a belief in the recent date of some of them is presented in the case of the dolmens at St. Germain-sur-Vienne, near Confolens, in Poitou. Here we have a huge unhewn capstone, measuring 12 ft. by 15 ft., and of proportional thickness, raised upon five columns, of Gothic design, whereof one has now fallen; which columns, as if to preclude the supposition that they were hewn out of solid blocks similar to those that support the generality of dolmens, are each composed of three separate pieces,—a base, a shaft, and a capital. "Doubt seems impossible with regard to this," says Mr. Fergusson, triumphantly: "it is a dolmen pure and simple, and it was erected in the twelfth century. In itself the fact may not be of any very great importance, but it cuts away the ground from any *à priori* argument as to the age of these monuments. It does not, of course, prove that they are all modern, but it does show that some of them at least were erected after the time of the Romans, and at an era extending far into the Middle Ages." Spain furnishes another remarkable case in point. Within the walls of a church, at a place called Arrichinaga, about 25 miles from Bilboa, in the province of Biscay, are preserved huge, cumbrous, unhewn stones, which appear to be parts of a dolmen. That these great blocks should have been enclosed in a Christian edifice, is at the least exceedingly singular, if the fact does not warrant the author's assumption that veneration for them must have been felt when it was built. At Kerland, in Brittany, there is a demi-dolmen, from which uprises a cross, as though some early convert was buried below, whose relatives still adhered to the traditional form of sepulchre.

We are enabled to reproduce some of the illustrations of these important evidences given in support of the author's position.*

We have a large amount of new matter on the score of Irish rude stone monumental antiquities. The great battle-fields of Southern Moytura and Northern Moytura he explored, with the assistance of Sir William Wilde's knowledge of the locality, and made out their wonderful story by the aid of their dolmens with single, and double, and treble circles, and circles without central dolmens, cairns, and other relics; more than this, he examines into the question of the date of these battles, and shifts it down the scale of events from the high place the old writers gave them to the first century before or after the birth of Christ, which, of course, enables him to fit this vast field of antiquities neatly into his theory. About eight years ago a range of twenty-five or thirty cairns was first noticed, on Slieve na Calliagh, the hags' or witches' hill, near Brugh na Boinne, the whole of which have since been opened by Mr. Conwell. One of the most perfect of these tumuli, 116 ft. in diameter, is surrounded by thirty-seven stones as a retaining wall, and, on its north side, has a large stone set back from this circle, which is fashioned into a rude seat, and covered with the identical cup markings and concentric circles that have been recently found inscribed on rocks in so many parts of England and Scotland. There is a central chamber on this tumulus whereof twenty-eight of the stones are ornamented with similar and additional sculptures. Another tumulus contains a chamber, 29 ft. deep and 13 ft. across, with similar ornamentation on its walls and pillars, in the centre of which lay one of the largest of the low flat basins, whose use is still a matter of wonderment, that has yet been found. Below the basin were charred bones and forty-eight human teeth, a few jet objects, and a syenite ball. Pieces of pottery, bone implements, and more charred bones were found in various parts of the chamber; but though the sculptures appear to Mr. Fergusson to have been engraved with a sharp metal tool, there were no metal objects to be seen. One of Mr. Conwell's drawings representing this chamber we give. Our author supposes this range to be the cemetery of Talten, celebrated in Irish legend.

As might be expected, the early monuments of Scandinavia and North Germany occupy some prominence, likewise, in the volume. It is, doubtless, the Scandinavian battle-fields that have given Mr. Fergusson the courage to assume that our own circles are memorials of battles. One of them, at Kongsbacka, has similar alignments, he perceives, to those at Dartmoor, Ashdown, and Karnac, and this is assigned to the fifth century. No event in history, he affirms, is better known than the fight on the Braavalla Heath, in Östergothland, where the blind old King Harald Hildetand was vanquished by his nephew, Sigurd Ring, and it does not seem to admit of doubt but that the circles and cairns on the heath commemorate the event and contain the ashes of the slain; and yet this field is nearly identical in its appearance with the Irish battle-fields at Moytura mentioned above. This similarity causes him, in fact, to falter in his opinion as to the builders of the Irish circles, and to ask whether they may not have been erected by Scandinavian Vikings on the occasion of a descent upon the west coast of Ireland.

* See p. 86.

In spite of the haze that has settled over this branch of archæology, Mr. Fergusson believes that it will yet be possible to unravel the history of its great pilings and grave circles and lines of grey stones. Continuous researches have done much for the monuments of Egypt, Babylon, and Nineveh; and are likely to do as much for the remains under consideration. Meanwhile, he places great stress upon the fact of the classic writings containing no allusions to them. He asks whether such an artist as Cæsar is likely to have passed them over; especially, as when he watched the fight between his galleys and the fleet of the Veneti in the Morbihan, he probably stood on Mont St. Michel and among the stone avenues of Carnac. The Romans, too, occupied Old Sarum during their stay in England, and one of their roads passed close to Silbury Hill; yet there is no allusion to Stonehenge or Avebury in anything that is written. The same silence is observed with reference to the dolmens in France. It is true Diodorus mentions a circular temple on an island belonging to the Hyperboreans; but his statement is so vague that it is impossible to identify the island. Under these circumstances, the author thinks himself approaching the truth in assuming that the bulk of our rude stone monuments belong to the period succeeding the Roman evacuation. Of those who have investigated the subject for themselves, some will receive and some will resent Mr. Fergusson's interpretations; but all who look into his book and examine his two hundred and thirty-four illustrations will be gratified. We should give but a limited idea of the scope of the work, the principal object of the present notice, if we omitted to add that the monuments of the Mediterranean islands, Western Asia, North America, Central America, and Peru, are also described as fully as those of the parts of the globe already mentioned. On another occasion we shall discuss Mr. Fergusson's theory, and show what reasons there are for believing he may be wrong.

THE ANTIQUE: ITS STUDY OR ITS RESTORATION.

WE are glad to learn that advantage is being taken of the reproductions of antique sculpture at South Kensington, as well as of the resources of the Art Library and Museum, to bring into definite and accessible form the rules of symmetry observed by the great artists of antiquity. It is extraordinary that it should have been left to the present time to accomplish so much needed a work. One valuable result, however, is evident, from the collection, in one spot, of accurate copies of the most famous statues, as well as of the manuscripts, drawings, and rare books which are so accessible in the Art Library. A few years ago, months or even years would have been needed in order to carry out that accurate investigation which may now be accomplished in weeks. To visit Rome, Florence, Naples, Paris, and the British Museum, in order to take measurements of the Apollo Belvidere, the Venus de' Medici, the Toro Farnese, the Venus of Milo, the Torso of Cupid, the Theseus, and other noble works of ancient art, is, in itself, an undertaking. Permission and aid for the purpose of artistic investigation would have been more readily asked than obtained. And, in inquiries of this nature, there are constantly fresh references to former observations, rendered desirable by the continuance of research, that are all but impossible when the objects of examination are scattered through the museums of Europe.

The indescribable and magic charm of antique Grecian sculpture is felt by all those who have ever crossed the threshold of the temple of art. The cause of this charm, or rather the causes, yet baffle the investigator. Not that we are unaware of the nature of some of these causes. We know that, in ancient Greece, the symmetry of the body was a matter of deep study, and of almost religious culture. A divine gift of beauty was inherent in the blood. The climate, the topographic influence of broken hill country, of cool sea breezes tempering the heat of summer, of rocky islets tempting to a timid navigation,—the great national games, the development of strength and grace for the express purpose of victory in the *palæstra*,—all tended to enhance this gift. Female beauty was impersonated as a goddess. Various forms of manly symmetry engaged the care of the sculptor. The ponderous muscular form of Hercules; the lithe, fleet, angry majesty of Apollo; the saucy grace of Cupid; were all regarded with the same reverent love with which Raffaelle or Murillo dwelt on the incidents of the Divine Life. The greatest of Greek philosophers mentions magnitude of size as the first virtue of women; and that with as much simplicity, as if no educated man could doubt that a stature which gave promise of being productive of fine-grown children was the first quality that any one ought to seek in a wife. Little indications occur in Greek literature that show that such was indeed the habit of Greek thought; as when Xenophon mentions, with unfeigned admiration, the large and beautiful women who were to be found in the countries traversed during the expedition of the Ten Thousand.

Exact admeasurements of famous statues have, indeed, been taken at various times. In the library of the British Museum is a folio volume, containing thirty plates, on the proportions of the human body, published at Paris, in 1683, by Gérard Audran, an assistant of the sculptor, Lebrun. A German edition of this work was published at Nüremberg in 1686. Among the seventy volumes, original or translated, that bear the name of Albrecht Dürer on the title-page, is to be found the small folio bearing the quaint title, "*Vier Bücher von Menschlicher Proportion, durch Albrechten Dürer von Nurenberg erfunden und beschriben*," which is full of wood-cuts of male and female forms, and of interminable geometric investigations of the solid contents of various figures, applied to the equiponderation of the human form. The "*Trattato della Pittura di Leonardo da Vinci*" has been translated into German, Dutch, Spanish, and French, as well as into English by J. F. Rigaud; and contains hints of the utmost value, although they were never brought into definite form by the accomplished author. All these, and other yet more detailed works of an anatomical nature, are, however, far beyond either the reach or the requirements of the ordinary student.

Another mode of treatment is to be found in almost any treatise on drawing, in which complicated arrangements of squares, circles, and triangles are described around the delineations of lay figures. The whole web of diagrams may generally be traced to unacquaintance on the part of the delineator with the use of mathematical instruments, or with the simple relations of the sides of triangles. Thus, where one dimension of the person is normally or approximately equal to another, the relation is expressed by describing a circle, instead of by a simple indication of the fact. In one little work, now out of print, the ratio that exists between the base and the hypothenuse of a right-angled triangle seems to have been regarded by the author as a discovery of such novelty and importance, that he has impressed the diagram which illustrates it on the cover, as well as on the title-page, of his book.

All this learned, or unlearned, trifling, however, serves only to divert the mind of the student from an inquiry that may really have fruitful results. Can there be detected any such rules of exact proportionate symmetry either in the writings or in the works of the ancients, as to shed any light on the wonderful harmony of the forms of antique art?

We are convinced that one result of a thorough investigation of this subject will be the conviction that conventional rules were much more rigidly adhered to in the purest period of Grecian art than in the subsequent ages. How far the hands of Phidias and of Scopas were fettered by exact rules, and how far the grace and apparent mobility which later sculptors gave to their famous works arose from the neglect of the ancient canons, it will be most instructive to learn. It is clear, from some of the earliest relics of Greek art, such as the statue of Apollo found at Tegea, that Egyptian practice and example predominated over the early period of Grecian sculpture. In Egypt, what we now call the Conventional was reduced to the most perfect and durable system that can be conceived. We not only deduce this from the long series of Egyptian monuments, in which, for the ages that elapsed from the dynasty that reared the Pyramids to the Ptolemies, so little change was made in the sculptured representation of the human form; but we are in possession of the actual canon of the Egyptian draughtsmen. We find apartments, in monuments of very different date, in which the unfinished state of the walls leaves exposed to view the constructive lines by means of which these ancient artists invariably set out their work. The entire surface to be covered with sculpture, painting, or the curious combination of the two, which is known by the name of *koilanaglyph*, was marked off into squares. In the earlier period, nineteen of these squares were allotted to the height of a standing figure; in the later there were twenty-two. Every part of the frame was thus drawn according to exact and unvarying rule; and the identity of portraiture that prevails over every territorial division of the valley of the Nile, and during the reigns of at least twenty-five successive dynasties, is thus at once explained. Sculpture, in Egypt, crystallised at a date so far back as to be at present indeterminate; and the crystals kept their characteristic angles till Egyptian art itself perished under the attrition of Roman sway.

It is not to be supposed that, by exact investigation of the canon of the Greek sculptors, we shall be enabled to imitate the excellence of their work, any more than that by a careful study of the laws of prosody we shall be able to reproduce the poetry of Æschylus or of Euripides; but it is none the less true that such exact knowledge is necessary to anything like a critical appreciation of the merits of ancient art. How far this is absent from those spots where it is presumed to exist, is shown by the fact that the curators of the great national museums of London and of Paris, the British Museum and the Louvre, have each dealt with one of the most precious relics of antiquity in their possession in a manner that would have been rendered impossible by a very small amount of acquaintance with the laws of ancient sculpture.

The first of these misrenderings of the message uttered by the marbles of Greece is to be found in the case of the headless and mutilated statue of a Cupid, which is stamped by the impress of the purest times of art. To this beautiful fragment a portion of a left foot has been attached, which actually must have belonged to a figure of altogether different proportions. The height of the Cupid, when perfect, was close upon 56 in. The foot with which the statue has been accommodated measures 9⅞ in. or nearly 10 in., and cannot have belonged to a figure of less than from 64 in. to 70 in. in height; besides being of a long narrow form, that indicates the female sex. The important lessons to be drawn from the study of this exquisite fragment are rendered all but valueless by this inappropriate restoration.

The case of the beautiful female figure which was discovered, in 1820, in a cave in the Island of Melos, in several different portions, and which, after a curious series of adventures, was secured by the French Government, and now forms, perhaps, the most famous treasure of the Louvre, is still more remarkable. The curators of that museum, with a devotion to their duty which forms a bright exception to much of the history of the last two years in France, secured this statue from shell and from petroleum by an interment as careful as that by which domestic affection honours the relics of the departed. In the cracking of the plaster by means of which the original fragments had been united, it became evident that wedges had been inserted at the waist, which gave the upper part of the body that inclination to the left which is one of the most puzzling characteristics of the statue. As we are familiar with the figure, a plumb-line dropped from the fontanel, or hollow at the bottom of the throat, falls altogether without the left foot. The most authoritative rules on the subject of the equipoise of figures are to be found in the works of Leonardo da Vinci, a profound master of the subject, and are accepted as artistic canons. "The pit of the neck, between the two clavicles," are his words, "falls perpendicularly with the foot which bears the weight of the body." "If the figure rests upon one foot," is another precept of Leonardo, "the shoulder on that side will always be lower than the other, and the pit of the neck will fall perpendicularly over the middle of that leg which supports the body." If the arms be extended, or if any artificial weight be carried by the figure, the position of the fontanel will be changed. But nothing but the strain of a severe effort could throw it so far from the perpendicular as is the case with the statue in question. And the idea of such exertion is entirely inconsistent with the serene majesty both of face and form.

No attempt to decide on the original position of the arms has yet been attended with success. Among the fragments of Termes and of other statues which were found on the same spot with this noble figure, was a hand holding an apple. From this hand, which has never been satisfactorily co-ordinated with the figure, the name of Venus was applied, by M. Quatremère de Quincy. There was an ancient group, of which the idea

is preserved in gems, of Venus standing by Mars, with her left arm resting on the shoulders of the god. But the figure in question can have formed no part of such a group, as the right arm of Mars would in that case have rested on her back. Neither is the countenance in any way appropriate to such a composition.

The girths of this statue, the proportion between the height and the width of the face, and the peculiar physiognomical outline of the upper lip, are not those of the antique Venus. The latter, especially, is characteristic of Juno, and the draping of the lower part of the figure, while the entire upper part is undraped, was a feature of the grand statue of Juno, by Polycletus; the idea suggested being that the Queen of Olympus was hidden from men, but visible to the Immortals. It is true that in the group of Mars and Venus there is a drapery about the lower limbs of the latter, but it falls lower, and has nothing of the composed dignity of the drapery of the Juno of Melos.

Monsieur Félix Ravaisson, *Conservateur des Antiques et de la Sculpture moderne au Musée du Louvre, Membre de l'Institut*, has written a little work of sixty-eight pages on this subject, illustrated by photographs of the statue in its different conditions, which has been published by Messrs. Hachette. The work is one of great interest and value; and the extreme beauty of the first photograph, representing the noble figure in the coffin in which it she was enclosed to be transported from the Louvre, is such, that we trust Monsieur Ravaisson will take the precaution to have a gelatine plate taken from the negative, for the sake of obtaining permanent unmounted prints, before the latter is injured or destroyed.

M. Ravaisson's little work is divided into two parts. With the first we are disposed altogether to agree, from observations as to the plumbing of the figure, made before this *brochure* reached us. There is a plate representing three restorations of the statue, using that word, not to denote modern conjectural additions, but the presentation of the antique relic in its most correct position. No competent judge can doubt either the correctness of M. Ravaisson's views on this score, or the service that he has rendered to art by their publication. It appears from a letter from Monsieur de Clarac to Count de Forbin, when director of the Museum of the Louvre, now for the first time published, that some intrigue or jealousy between the architects of the Louvre and the conservator of antiquities led to the hasty erection of this statue, without the supervision of the latter. M. Ravaisson shows, in full detail, the modifications that successively became natural from the first cardinal error of not regulating the vertical line of the figure by keeping the horizontal joint which passes through the haunches truly level. Hence wooden wedges were introduced, stopping of plaster was added, and even a sacrilegious chisel was applied to the ancient marble. Independent reasons, founded on the inclination of the figure from left to right, on that from the back to the face, on the falling of the fold of the peplum that crosses the left thigh, and on the angle at which the right foot is placed to the leg, enforce the opinion that a level bed was formed at the period of the ancient restoration of a yet more ancient statue.

With the second portion of the work, for reasons previously indicated, we do not agree. M. Ravaisson adopts the idea of M. Quatremère de Quincy that this noble figure formed part of a group of Mars and Venus. We have seen no argument that appears to us conclusive, or even plausible, for giving the name of Venus to a statue of a character so different both in proportions and in expression from that proper to that goddess. Admitting that a proud and severe dignity is the chief characteristic of the figure, M. Ravaisson thinks that he traces in it the influence of the school of Lysippus. We are sure that the process of minute measurement would lead this distinguished *savant* to reconsider this idea. Lysippus is known to have diminished the heads of his statues, and given greater proportionate length to the limbs, in order, he said, to give more mobility and appearance of life. In the Venus de' Medici this reduction of the size of the head is but too apparent—to the great disadvantage of a statue of which the figure below the throat is perfect. But in the Juno of Melos the head is proportionately larger than in any figure we can at the moment cite, except the Theseus in the British Museum. It is larger than in the Antinous or in the Apollo Belvidere. Not only is this the case with reference to the height of the head, from the apex of the chin to the scalp, but the proportion between the width and length of face is fuller, as indeed is the case with all the horizonal proportions, than in the other instances we have mentioned.

We are happy to give an English echo to the expressions of M. Ravaisson as to Restoration. It seems, he says, that the habit of restoring ancient works is a fatal habit which henceforth should be entirely renounced. Formerly it was thought correct not only to repair antiques, but to turn them out "as good as new." Portions which were wanting were supplied from the fragments of other statues. A large number of statues have at present antique heads which do not belong to them, often those of a totally different epoch, and which, in other respects, in no way harmonise with the figure. In the Louvre itself we may see more than one Greek statue surmounted by the head of a Roman personage; more than one statue of a certain god or goddess surmounted by the head of a god or goddess altogether different.

In the absence of antique fragments, recourse has been had, to supply deficiencies, to the chisels of living artists, such as Montorsoli, Guglielmo della Porta, or even Michelangelo. It is none the less true that often these restorations have caused the antique relics to lose much of their value. In the first place, they have often damaged the general physiognomy and the significance of the statue. Thus in the Louvre we see an Apollo, of Archaic Greek style, transformed, by the attributes given to him, into a *Bonus Eventus*, a Roman deity of a late age; and a Wounded Amazon, whose tunic, originally kilted above the knee, according to the costume which the ancients invariably attributed to the Amazons, has become a floating robe. Above all, we see monuments of the finest workmanship disfigured by additions of extreme mediocrity. But even if such restorations were effected with science and with talent, it is almost impossible that the work succeeding should be in perfect accord with the ancient workmanship; and thus the entire work loses the capital merit of unity of style and of execution. Finally, we must add that, sensible of the extreme difficulty of bringing the restorations into perfect harmony with the antique, the artist has almost always finished by endeavouring to bring the antique into harmony with the restorations. This has been done by giving to the surface of the Greek or Roman work, sometimes with the chisel, more often with the file, the new appearance which the restored parts present. The beauty of a great number of excellent works has thus been irremediably injured. The statue of Diana the Huntress was repaired after this fashion by Barthélemy Prieur, an able sculptor, but one who did not fear, after having restored the parts which were deficient, to retouch almost the entire surface! This fact is sufficient to explain the hesitation with which we have always regarded this statue. M. Ravaisson justly says that the execution no longer seems to arrive at the height of the conception. The same is the case with the Pallas of Velletri: the same is the case with many of the fine statues that adorn other museums of Europe, especially that of the Vatican. For this reason, some of these statues, when compared with others more recently discovered, have been referred to an epoch much too modern. If the few untouched portions of the Diana and the Pallas be carefully examined, the hair, part of the tunic, and the right foot of the former, and certain portions of the drapery of the latter, the traces of Greek workmanship are, in the opinion of M. Ravaisson, certainly to be discovered. The sublime effect of the untouched fragments from the Parthenon, preserved in the British Museum, is happily contrasted with that of the above-described restorations.

A note is added to this essay, from the pen of M. Des Cloiseaux, member of the Academy of Science, as to the chemical character of the marble employed for the statue in question. This is stated to be calcareous Parian marble; the unusual designation being due to the fact that Paros produces two descriptions of statuary marble. The first is a pure carbonate of lime, which effervesces with acids, and has a specific gravity of 2·71. The other is a magnesian marble, a carbonate of lime and magnesia, which does not effervesce with acid, and which has a specific gravity of 2·835. It further appears to M. Des Cloiseaux that the upper part of the statue is not cut from marble of the same quality as the lower part, the grain of the former being somewhat finer, and the colour a little more yellow, than is the case with the latter. We should like to see a similar test applied to the Cupid which we previously mentioned.*

LAND.†

THE commercial uses of land are mainly of two kinds;—the one as the foundation for buildings for residence, and for trade and manufacturing and commercial purposes; the other as the basis for the production of food; and there is, in addition, its use for social enjoyment.

It is admitted that any one possessing, as the produce of his own exertions or of those of his predecessors, money in any form, save in that of land, may use it in any way he sees fit; but it is maintained that if the money be invested in land, the owner is to be regarded rather as a trustee for the good of society, which has a kind of primary charge upon all land. I have never seen this suggestion practically applied, except to owners of agricultural land.

Adam Smith, in his "Wealth of Nations," written in 1790, deemed it necessary to devote a chapter in refutation of the theory that land was the only source of wealth: the tendency to regard agricultural land as the source of all wealth still influences many minds.

Our earliest impressions convey to us the notions that the blessings of Providence are those of corn and wine and oil, and cattle on a thousand hills, and they are extended to those of the market, the counting-house, the iron-works, or the manufactory, only by an effort of the mind. A town operative never hears of any blessings of townspeople, beyond those shared in common with the agricultural and the pastoral labourer. Our classical reading strengthens these impressions; for the Greeks and Romans, having little trade, and that in the hands of slaves, regarded commercial occupation as servile. The leading idea of our poetry is that "God made the country, and man made the town;" and the feudal tenure of land is the basis of our legal system, into which the customs of merchants have been with some difficulty intruded. However small the parcel, land requires a solemn deed for its conveyance; while a cargo of iron worth 10,000*l.* may change hands by a pencil memorandum.

Yet the utmost that the most energetic agriculturist can do by increasing the produce of his land sinks into insignificance when compared with the additional value conferred upon it by its appropriation to commercial purposes. The cost of building is much the same in the City of London and in the agricultural districts, and the interest required on such expenditure is also much the same; but the site upon which a business has been built up by several generations (operating, perhaps, over the whole world) derives a value from the very magnitude of the revenue obtained upon it; and, as a fact, realises a value unattainable for land in any other form.

For commercial purposes, the value of land ranges from the rate of 1,000,000*l.* to the rate of 200*l.* for an acre; for agricultural purposes, it ranges from 200*l.* to 2*l.* for an acre; and for social enjoyment, seldom exceeds 200*l.* an acre. For many years the first division has been always increasing in this country, the second division constantly becoming more productive by the increased amount of capital available for its amelioration; both rising in value with the increasing wealth of the country. The rate of 1,000,000*l.* for an uncovered acre of land is obtained in the best parts of the City of London, 400,000*l.* at Liverpool, 100,000*l.* in Westminster, and prices, decreasing from those amounts down to 200*l.* an acre in the vicinity of small towns, and for sites of manufacturing works and for residential purposes, are obtained from land previously devoted to agricultural cultivation.

The rate for an acre of the most valuable uncovered land in the City of London, after the Great Fire in 1666, was 30,000*l.*, and it is stated that the value of the land was then one-third of the value of the property after it had buildings upon it. At the present time the highest rate for uncovered land may be taken at 1,000,000*l.* an acre, and such value constitutes fully three-fourths of the value of the property after it has buildings upon it. The increase is thirty-fold.

* Since writing the above we observe an announcement that the intended work on Symmetry to which we referred is from the pen of Mr. Conder.

† By Mr. Edmund James Smith, member. Read at the Ordinary General Meeting of the Institution of Surveyors, January 29th: Mr. Thomas Huskinson (vice-president) in the chair.

Bentham lays down the principle that all improvement in the value of land should be confiscated to the State. If this theory had been adopted, it would have applied to land available for commercial purposes much more hardly than to agricultural land; and the revival of this suggestion by Mr. Mill would also operate most on land used for commercial purposes.

Mr. I'Anson, in his excellent paper of last session, showed how the special values of portions of land in the City of London have been maintained by trades carried on in the same spaces for centuries, and makes self-evident the dependence of the values of the sites of buildings upon the trades there carried on. In view of this interdependence, it is difficult to say why this Benthamite theory should not extend to the profits of trade as well as of land.

In Egypt, this theory of confiscation is carried out. The State appropriates what it deems to be the excess of each Fellah's produce,* leaving to him his maize, cucumbers, and onions to make his existence possible; but taking away his wheat and his beans. By Englishmen, this practice is not thought to be wise even in the interest of the State itself: there is not much between it and the Benthamite theory.

The commencement of the great increase of buildings on account of increasing trade and population may be dated from about the year 1770, when the recovery of coal had become easy through the effect of steam power, and steam power had become generally available in consequence of the abundance of coal.

We now glance at the improvements in agriculture during the last hundred years.

In 1770, great part of the corn-growing counties were parcelled out into parishes, which much resembled each other in their agricultural features. The village stood in the best part of the parish surrounded by a small portion of inclosed land. Next to these inclosures there were large open fields, farmed in narrow strips by separate occupiers, and there were open meadows along the village brook, and large space of grass land on the outside of some, or of all, of the open fields. These fields were generally three in number, because three years were required for the fulfilment of their invariable course of husbandry, and they were divided into narrow strips because the tenants had originally each ploughed in each field as much as he could in a day. It was rare to find three acres in one tenancy lying together. There are still a few such open field parishes; one, Castor, near Peterborough, of which I show you a map.

The first step taken to effect improved cultivation was the inclosure (generally by Act of Parliament) of those fields and pastures which were called common, not because they were not private lands, but, because, after the corn and hay were carried, they were depastured in common by all the tenants of the parish. The effect of an inclosure was to substitute, for perhaps a hundred of such strips of arable occupied by one tenant (like the strips coloured pink on the Castor map), an integral block of land, fenced in, and capable of cultivation in any way the tenant saw fit, and also integral fenced shares of the meadows and common pastuage.

This was an immense stride. The fields had previously been capable of cultivation according only to the rule of the parish, say—fallow, wheat, and beans, in the three fields, in turn; but the tenant could now cultivate according to his own judgment, and grow green crops for the maintenance of his live stock in addition to his shares of the meadow lands and of the grass pasturage. Bare fallow is now one-twentieth, then it was one-fourth, of all the arable land.

The high prices of corn from 1790 to 1818 operated as an inducement for the breaking-up of the grass land previously intercommoned on the clay soils (which had constituted nearly the whole of the wheat-growing land) and also for the inclosure and division into blocks of the heaths, and the chalk hills, and the light lands of the country on which wheat had before been scarcely grown.

Oliver Cromwell gave 100*l.* a year to a farmer named Howe, for introducing the cultivation of turnips; but their cultivation had made little progress in the face of the practical impossibility of growing them in the open fields. As soon, however, as the land was divided into inclosures, turnips became the foundation of the alternate system of husbandry, and the basis upon which the rearing and maintenance of cattle and sheep are founded.

* Egypt, by Rev. F. Barham Zincke. 1871.

Under these Inclosure Acts the lands were also generally freed from tithes in kind; and no small portion of the farming superiority of the north-eastern counties is owing to the fact of the tithes having been there extinguished fifty years before the general commutation of tithes throughout the country under the Act of 1836. We have almost forgotten that no one, so long as tithe was taken in kind, could carry corn or hay, or store turnips, or move live stock, until the tithe-owner had taken his tenth stook, or tenth turnip, or his tenth calf, pig, or goose.

The great fall in rents after the year 1818 must not be left unnoticed. Rents then fell fully one-third. In many cases, lands are now held at the same rentals as they were let at in 1810-14. Those rents depended on the high price of corn; these rents depend on the increased produce of the land from improved cultivation. Those rested on an insecure basis; these may be regarded as permanent.

Except this change from cultivation in open fields and pasturage in common to cultivation in inclosures is duly borne in mind, the increase of agricultural produce in corn and in live stock in the last hundred years is wholly inexplicable.

It is stated by Mr. Caird in 1851, and it is repeated by Mr. Fowler in 1871, that the produce of wheat has only increased since 1770 from 23 to 26½ bushels to the acre. The comparison is fallacious. The present wheat lands are not only those which grew wheat prior to 1770, but large tracts which never could have grown wheat at all except under the alternate system of husbandry. The present average produce of wheat does not indicate the improvement on the area formerly cultivated for that grain, but is the average of a very different and of a much more extensive area. The wheat crop about 1770 was probably 2,500,000 quarters,—the wheat crop is now 10,000,000 quarters,—and this is the true comparison on this single point. The statement that the average per acre has risen only from 23 bushels to 26½ bushels is not a sound basis of comparison, because the lands cultivated for wheat are not the same.

The general principle of the provision of the food of the kingdom by the land of the kingdom was given up when the Corn Laws were repealed; for this country lies at a disadvantage in comparison with countries in a latitude more congenial to the production of a grain which can be carried at a cheaper rate, bulk for bulk, than most articles of commerce. It may be desirable that as large a portion of the consumption of wheat as is practicable should be grown in England, but that the whole consumption should be so grown at present is compatible only with the complete possession of the market. That object was not deemed worth the cost; nor could the duties on the importation of corn have been maintained.

We will now turn to another set of facts or statistics. The population of the towns with 10,000 inhabitants at the first census in the year 1801, was 3,500,000, and of the rest of the country 5,250,000. In the next twenty years the towns with 10,000 inhabitants rose to a population of 5,250,000, and the rest of the country to a population of 6,750,000; and in the fifty years which have since passed those towns have reached nearly 13,000,000, instead of 5,250,000, and the rest of the country somewhat less than 10,000,000, instead of 6,750,000. The increase in the country districts in the last five centuries was at rates decreasing from 10 to 3 per cent. (although there is no reason to think that the fecundity of the agricultural population is not equal to that of the town population), while the number of residents in towns of 10,000 inhabitants increased at about an equal rate of 20 per cent. on each decennial return of population.

That this increase in the towns took place so rapidly that the governing powers, whether in Church or State, failed to provide a corresponding extension of spiritual instruction, or of sanitary control, or of municipal government, is our main existing difficulty. It was not until about thirty years since that practical infidelity, an enormous death-rate, and a general want of government of the towns, forced these subjects into attention; and that provision began to be made for the instruction, and the health, and the welfare of the town population. Thirty years have elapsed, and great progress has been made. Money, and intelligence, and self-devotion abound, and the rate of the progress of improvement shows no indication of diminution.

But, whatever the result might be as regards the towns, the increasing population of the agricultural districts found residence and means of employment within and around them, and the rate of wages has throughout this period been highest in the great centres of industry in the north, and lowest in the purely agricultural districts in the south of England. The difference, before the law of settlement was practically abrogated in 1865, was 60 per cent.,—wages ranging at 13s. in the north and 8s. in the south of England.

The use of land for social enjoyment requires no dry statistics. The thirtieth Stanley and the twenty-first Acland resident on their ancestral estates testify to the continuity of landed possessions, as the fact of the sexton of the parish of St. George, Hanover-square, being served as the nearest male heir of Thomas Plantagenet, brother of the Black Prince, testifies to the mutability of fortune. It is remarkable that our capital, accumulating at the rate of 150,000,000*l.* a year, rarely establishes an entirely new social country centre, but finds an ancient place which the impoverished possessor vacates for the new man. There is no grade of our peerage in which there is not at least one whose honours were founded on success in trade.

The principle that all property is robbery is, at least, intelligible; but the moment that the acquisition of any property by the individual is admitted, it is impossible to say that the acquisition, by legal means, of one kind of property is robbery, and that of another kind of property is allowable. Property must stand or fall as a whole. It is, therefore, quite illogical to maintain that ancient inclosures are distinguishable from land cultivated as arable pastured in common during part of the year, or from pasturage pastured in common during the whole year. And yet it is maintained that obstacles should be interposed to prevent land-owners and their tenants from dividing into blocks for cultivation lands heretofore depastured in common, while it is generally admitted that ancient inclosures cannot be meddled with.

The rent of agricultural land varies from one-half the value of the produce in certain cases of grass land to one-ninth of the value of the produce in arable clay lands where the costs of cultivation are very large. Such rent increases positively with the improvement of land, but decreases relatively to the increased amount and value of the produce. Taking the "Whitfield Example Farm" as an instance, the rent is stated to have been 44 per cent. of the value of the gross produce prior to the improvement in 1840, and to have been 20 per cent. of the value of the gross produce after the farm had been improved by the owner at an expenditure of 3,500*l.* This example accurately illustrates the fact that the additional labour and capital requisite for the production of large quantities of food and stock involve the acceptance by the land-owner of a less proportion of the actual produce of the farm, the expenses of labour, and the amount of capital employed being increased. The produce, valued at 463*l.* before improvement, was divided into 200*l.* to the owners, 65*l.* tithes and taxes; labour, 170*l.*; tenant, 28*l.* The produce, valued at 1,912*l.* after improvement, was divided into rent, 375*l.*; tithes and taxes, 90*l.*; labour and maintenance of stock, 1,000*l.*; tenant, 447*l.* The chief gain was to the country, for the value of the produce was increased fourfold; the next greatest gain was the substitution of a substantial tenant for a poor one; and the landlord had 5 per cent. interest for his outlay. The tithes remained unaltered, or the outlay would not have been made. If the tithe had continued to be taken in kind, 120*l.* would have been paid to the tithe-owner in addition to his previous receipt.

If the surrender of land to the State could be required, the owner and the occupier must be paid at least for everything, except for the value of the bare land, wild and uncultivated. I have known where lands have reverted to pasturage common to all the occupiers of a township, after having been inclosed by Act of Parliament, and allotted to individuals, subject to the provision that if the allottees did not fence in the lands they should revert to their previous condition. This is some measure of the amount which the owner and occupier would have to allow to the State as a deduction from the payment of the value of the land in fee simple and of tenant right if all lands were resumed by the State.

We have seen that the definition of land extends from that long used for commercial purposes, and worth at the rate of a million of money for the acre to land of so little value as that the allottees will not fence it and take possession. The circle will be completed by

observing that such least valuable land is frequently that where minerals are found, and that the striking a vein of ore within it raises the value of the surface at one bound, so as to bring it within the character of commercial land. There is no middle course between declaring all property to be robbery and admitting that no land, however used, can be taken compulsorily without purchase.*

FROM ST. PETERSBURG.

CONTINUING his notes, Colonel Richardson Gardiner writes:—Let me say something about the famous carriages of the country, the "troctka" and the "chetverka." The first is a large car on a sleigh, drawn by three horses abreast, and holds four people inside besides the driver, who stands in a sort of receptacle for his legs just inside the splash-board. The centre horse has a grand and gorgeous yoke, which attaches him to the shafts, and the outside horses run along in traces. The harness is brilliant with silver plating, but, best of all, the pace they go at is most exhilirating; when you get into the open country, where the snow is in good condition for sledging, or, still better, on the ice on the river or on the Gulf of Finland, and the driver exhorts his horses to increased action simply by his voice and the language he uses to them, which they seem perfectly to understand. Off they go at full gallop, which gives you the nearest idea to what must be the delightful sensation of flying of which you can possibly conceive, and for miles and miles they will continue stretching away at a glorious pace, although, from the appearance of the animals, you would hardly consider them capable of it, but they are "very little fellows, and as hard as nails."

A "chetverka" is a four-horse carriage, but not used so much on a sleigh as on wheels in the summer. The four horses are harnessed abreast, but their position and action while in motion is most curious. The pair in the centre do most of the work and the outsiders represent effect, and in order to give you an idea of the appearance they present, first of all, imagine them to be all looking and standing straight to the front. Well, we will leave the centre horses in this position, and give our word of command to the rear and off horses one after the other. Now for the horses on the near side. Attention! Left face! Left wheel! March! And just as he has complied with your instructions, and put out his left or near leg, to commence the march and wheel, halt him. And then you have him as he commences his gallop when started off. For the horse on the off side you reverse your word of command as regards his wheel, which must be right wheel, and you get both your horses facing outwards, and causing the four to present from the point the shape of an extended fan.

We had a delightful drive in our troctka one evening last week to the "Ice Hills," which afford much amusement here in winter. We had a few friends to dine with us, and after dinner our troctkas were ordered round, and away we went up the Nevski, over the river Neva, with temporary lamp-posts erected on the ice to direct the way, and arrived at full gallop at our destination. When we had mounted an immense flight of steps to get to the top of the ice-hill, we reached a platform, from which you perceived a very precipitate descent of glittering ice, extending for some considerable distance. There you find the Russian guides, with their long flat pieces of board, covered with cloth, and fixed on to irons underneath, exactly resembling skates. This is long enough for two people to sit upon, but very narrow, the guide behind to direct it in its flight over the ice, and you in front with nothing to hold on by. When thus arranged at the edge of the platform, your skating-board is pushed forward, and in a moment you are off at the rate of at least sixty miles an hour, as hard as you can tear, down the ice-hill. We hesitated some time before trusting ourselves to this amusement, but, summoning courage, I took the lead, and enjoyed it so much that I induced L. and all the rest of the party to follow suite; and away we went, one after another, helter-skelter down the ice, almost taking our breath away before we were eventually stopped at the bottom, by a judiciously-placed layer of snow. Then up again, continually renewing the pleasurable excitement.

This day is the Russian 6th of January (the Epiphany), kept very sacredly by the Russian Church, as the day on which our Saviour was baptised by St. John. Accordingly, every year the metropolitan, or archbishop of St. Petersburg, accompanied by the emperor, his sons, and all the male members of the royal family, forms a grand religious procession, headed by representatives from all the Russian regiments, with their colours, and proceeds in state to a beautiful temple, erected for the occasion, immediately opposite the Palace, on the banks of the river Neva, to celebrate the baptismal ceremony. Such a sight of regal magnificence, combining all the splendour of the grandest court in Europe, with a full display by a most pageantistic church, and realising to your mind a spirit of soul-felt devotion, I have never before witnessed. The long line of galleries, gorgeously-decorated rooms, guards of soldiers from every regiment in St. Petersburg, hundreds of officers in full-dress uniforms, with orders glittering with jewels, ambassadors from every court in Europe, and then the emperor, with military music striking up by band after band, as he passed along, created a sensation more easily felt than described. From the windows of the Palace we watched the ceremony. The emperor, with all his court, the high priests of the Russian religion, countless thousands of his subjects, all bare-headed, with eight degrees of frost, while the archbishop offered up his prayer, and afterwards blessed the banners of the regiments of all Russia, by which he was surrounded. The religious ceremony terminated, the procession returned to the Palace, passing through the rooms, the emperor bowing to us all as we lined the way. To give you an idea of the liberality of the court, as well as of its magnificence, there were upwards of 2,000 covers laid for a champagne *déjeûner-à-la-fourchette* for those who were invited.

* To be continued.

THE BRIGHTON AQUARIUM.

FOREMOST among public buildings in Brighton is the Aquarium, which is nearly completed. Mr. E. Birch is the engineer, or, as we should prefer to say, the architect.

The ground occupied by the building and offices is a space of 700 ft. east and west by 100 ft. north and south. The principal entrance is opposite the Albion Hotel. The entrance-court (58 ft. by 35 ft.) leads into the entrance-hall (100 ft. by 50 ft.), and the restaurant (60 ft. by 30 ft.). From the entrance-hall we come to the aquarium proper, which consists of a continuous corridor, 460 ft. in length, and from 23 ft. to 46 ft. in width, having forty-two specimen tanks on either side, from 100 ft. to 11 ft. in length, in which the fish are viewed through plate-glass, forming the fronts of the tanks. A space for table aquaria, 100 ft. by 23 ft.; and a conservatory, &c., 160 ft. by 40 ft., communicate with this corridor.

The engine-house, naturalists' rooms, &c., are at the east end of the building. The kitchens and other necessary offices are in appropriate positions, near the restaurant. The upper part of the building is arranged to form a promenade the entire length of the building, and will have verandas with seats under, facing the sea, band-house, and saloon. Ornamental balustrades and bases will be introduced on this promenade. Part of the aquarium stands on the road that led to the Chain Pier, and a new road, 60 ft. wide, to a sea-wall has been constructed between the Aquarium and the sea, from the Albion Hotel to the Chain Pier.

The building, externally, is of red bricks, with Portland-stone dressings. The principal front is of terra-cotta (red and cream-coloured), nereids, tritons, sea-plants, and other appropriate enrichments being introduced; the arms of the company and the town of Brighton, and the monograms of the chief promoters of the undertaking. In panel, on frieze, in mosaic, is the text, "And God said, Let the waters bring forth abundantly the moving creature that hath life."

The corridor of the Aquarium has granite and serpentine columns, and carved caps, from which, and corbels at the sides, spring stone ribs of groining, with carved bosses at intersection of diagonal ribs, and filling in of red and black and white and red bricks in alternate bays. The paving to the corridor is of encaustic tiles. The tanks for specimens have plate-glass 1 in. thick, and will be lined with rockwork. There are steps leading from this corridor to terraces over.

The conservatory, &c., are similar in character to the corridor. The conservatory has a glazed roof, with ornamental cast-iron bosses. The works have been carried out under the superintendence of Mr. J. S. Nightingale.

Ransome's patent concrete stone has been used in some portions of the work, and has attracted attention, this being its first introduction in Brighton. Concrete of shingle and Portland cement has been extensively used in walls where out of sight.

WHY THE METRIC SYSTEM?

SIR,—The subject of the metric system and the question of its introduction into England having been recently revived, I have thought it worth while to trouble you with a few lines to show that it is quite unnecessary to introduce that most inconvenient standard, the mètre, even to obtain the advantages which it offers in lieu of the great embarrassment which it would produce.

I have had some little experience of the mètre in actual practice, and have often used our own standard decimally, and can thus confidently affirm the superiority of the English standard under parallel conditions.

The defects of the mètre are, firstly, that it is too long to be a good integer of numeration; and, secondly, that for the same reason its subdivisions are inconvenient. Owing to its great length, a vast majority of things measured must be expressed fractionally, and, as respects its subdivisions, the centimètre is too coarse, and the millimètre too fine, for ordinary use.

It is obvious, however, that the support which has been accorded to the proposal to introduce the mètre rests upon some plausible basis, namely, the facility which it is supposed it would give to mercantile transactions with the countries which have adopted it and its decimal notation, aided, it must be admitted, by some confusion in our own weights and our measures of capacity.

We may practically obtain both these ends without any serious disturbance of our own system.

Firstly, speaking of lineal measures, to obtain the advantage of decimal notation we have no occasion to resort to the mètre. It would suffice to divide the inch into ten parts habitually instead of only on the best rules, as at present; and in our measurements,—at any rate, in those of moderate extent,—to make more use of inches and less of feet than we generally do. Mechanical engineers and glaziers, to a great extent, already reckon their measurements in inches, and tailors drop the mention of feet altogether. Measurements thus reckoned would be commensurable to a remarkable extent with the mètre, which is equal to 39·3708 in.

To demonstrate this, it will be convenient to give some suitable designation to the length of 10 in. From the Italian *palmo*, of analogous length, let 10 in. be called the *palm*. Then for ordinary comparison, 40 in., or four palms, would reckon as one mètre, and for business transactions, one four-palm measure lineal as one mètre and 1½ per cent. added to it (that is, four palms = one mètre, one centimètre, and five millimètres), the correction to be added to square and cubic mètres being 3 per cent. and 5 per cent. respectively. These corrections, reversed, would reduce mètres to the four-palm measure of the same denominations. The errors by which these approximate reductions are affected would be less than the probable errors of measurement; I mean as measurements are in practice taken, with due but not extraordinary care. If, instead of the per-centages above given, namely, 15, 30, and 50 per mil., the corrections on lineal square and cubic were respectively 16 per mil., 32 per mil., and 48 per mil., the agreements would be beyond the reach of ordinary measurement altogether; that is, without the aid of refinements which are never used except for scientific purposes. These per-centages are easily applied on paper. They might be readily taught at our schools, and the results so obtained would be at once available for all persons who wanted to employ them. As respects larger measures, no advantage worth mentioning would attend the reconciling miles with kilometers or acres with hectares more nearly than at present. Perhaps, however, we might ultimately be led to a mile of 64,000 in. giving to each link of the Gunter's chain the measure of 8 in.; but this is looking further ahead than is at all requisite at present.

As respects our weights and measures of capacity,—to reduce quarts to litres, and pounds to kilogrammes, by an easy per centage applied to each, offers no difficulty. Our own sub-division by halving of *these measures* is more convenient in practice than the metrical system, and needs no revision. But if we should

adopt decimal multiples of quarts and pounds for larger quantities, it would be found very simple, and improve our own system in its weakest point.

F. C. PENROSE.

THE LATE MR. THOMAS VERNON, LINE ENGRAVER.

ON the 22nd ult. English art lost one of the ablest of its few remaining votaries in pure line-engraving. We allude to the death, at the age of forty-eight, of Mr. Thomas Vernon.

He was born in Staffordshire, educated in Paris, and was afterwards a pupil of Mr. Lightfoot. Amongst the works which vindicated Mr. Vernon's position in the front rank of English line-engravers are, — The "Bacchus," after Hilton; the "Christ and Virgin," after Raffaelle; the "First-born," after Cope; the "Virgin and Saviour," after Dyce; the "Princess Helena," and the "Lady Constance Grosvenor," after Winterhalter; the "Olivia Unveiling," after Leslie; the "Rubens's Wife," after Rubens; and, his *chef d'œuvre*, the "Christ healing the Sick," after Murillo, from the picture in the possession of Mr. Tomline, M.P., a piece of engraving of the highest class, worthy of ranking with the works of Doo and Robinson. Mr. Tomline, our readers may remember, presented this plate to the Newspaper Press Fund, and it has not yet been published.

While English art is the poorer by Mr. Vernon's death, many personal friends deplore the loss on personal grounds.

IN MEMORIAM.

WILLIAM RANDALL AND REUBEN WARN, WORKMEN.

IT is good for us to recognise merit everywhere, but especially merit in humble life, when it has to struggle with many unfavourable circumstances which the comfortable classes can so little realise.

The two men above named I happened to know personally, and, knowing, to respect most highly, for the good they did in the midst of their daily care and toil.

William Randall, journeyman carpenter, was remarkable for two things,—first, his constant efforts to call public attention to the necessity of providing extended means of culture and education for his fellow-workmen; and, secondly, the moral courage with which, on public occasions, he bravely opposed the popular view, when he thought it unjust or mistaken. In respect to the first of these matters, he was, as has been already stated in your columns, a constant contributor to the *Builder*, under the title of "Jack Plane," writing letters full of terse good sense and of practical suggestions. In respect to the second, one cannot too much admire, in these days, the honest outspokenness with which at meetings and discussions he often put forward views opposed to those around him, not from mere love of opposition, but from a simple desire that both sides should be fairly weighed. On a recent occasion he nearly suffered personal injury, — of course, unintentionally, — when hustled out of a crowded meeting, for his opposition to the resolutions proposed. He was in the habit of attending discussions and conferences on social questions, at the office of the Workmen's Club and Institute Union, and it was there that I made his acquaintance. His death was caused by the fall of a picture, and he lingered only a few hours. Notwithstanding his industry and inexpensive habits (he was a teetotaller), his widow and large family, including, besides a boy, six girls under thirteen years of age, are left without means, and it is on their behalf that I now write. The boy has been taken as an apprentice by his father's late employers; but, of course, he can as yet contribute but little to the support of the household. I shall be glad to receive any suggestions of aid for the education of the five younger children, and perhaps some of your readers may enable the eldest girl to find service. The mother has been enabled by a friend to purchase a sewing-machine, and is anxious to obtain mantle-work. Her address is 34, Swinton-street, Gray's-inn-road.

Reuben Warn was a metal-plate-worker, in the employ of Messrs. Wilson, in Wardour-street. Some years ago, observing the serious disadvantages,—such as waste of time and material,—occasioned by ignorance as to the principles on which the required patterns should be struck, he set himself to learn practical geometry. With much labour and perseverance, he then studied the application of these principles to the special work of his trade, and prepared a most useful hand-book,* illustrated by a large collection of designs. After his long day's work, he was always ready to devote his evenings to the instruction of young men in the trade; and latterly he conducted a class on this subject, at the St. James's and Soho Club. Such useful and unselfish services, given zealously and unostentatiously, deserve high praise. He has now died, after a very long illness, accompanied with great agony,—and, of course, deprived during that time of earning wages. Let me, therefore, say a word on behalf of his family. Mrs. Warn has three children. The eldest girl is being educated for the duties of an accountant, or a telegraph clerk, and is making excellent progress in her studies. I had hoped to obtain admission for the boy (nine years old) into the London Orphan Asylum; but the secretary states that the children of workmen are not eligible. The youngest girl is, from delicate health, at present unable to go to school or be otherwise employed. I shall be glad to aid or advise in obtaining a place for the eldest girl (fifteen), and education at some institution for the boy. I propose trying to obtain admission for him into the Orphan Working School, Maitland Park, and I hope this letter may bring some votes for his election. Mrs. Warn's address is 54, Marquis-road, Camden-square.

HODGSON PRATT.

8, *Lancaster-terrace, Regent's Park.*

CARVED OAK DECORATIONS.

MESSRS. HINDLEY & SON have exhibited at the Society of Arts a series of twenty-six carved oak panels, intended as a dining-room wall-decoration, for Mr. C. B. C. Wright, of Bolton Hall, Yorkshire. The exhibitors have thought them worthy to be made public for two reasons:—First, for the scheme and novelty of the design, which is the illustration of scenes of animal life in Britain, past and present, by panels introduced into a dado, or wainscoting, about 5 ft. 3 in. high; and, secondly, as evidence of the skill of the carvers in their establishment, who have executed the work from drawings, "without the aid of a single model," subject to the control and direction of the artist of the firm, Mr. George Lock.

It is claimed that the cost of producing the panels has been comparatively small in consequence, and we shall be glad to know what the cost to the purchaser really was. The fact that the workmen had no models is not to be boasted of; it is simply an extenuation of any faults apparent: the work would of course have been all the better if models had been resorted to. The panels are to be regarded as inexpensive sketches, rather than finished works; and we gladly say that some of them show much spirit, and that a few of them are very creditable specimens of wood-carving. As a whole, they will make a very interesting room, and are far superior to the senseless stuff which is supplied wholesale from Wardour-street for similar purposes.

Mr. Lock, under whose direction they have been produced, is now a veteran in the art. Many years have passed since we found him at work on the restoration of the carvings in St. James's Church, Piccadilly, and gave him hearty praise for the skill he showed there.

ASSESSMENTS.

AN interesting return, called for by Mr. Goschen, has been issued from the Poor-Law Board, showing the rateable value of—1. Lands; 2. Buildings; 3. Railways; 4. Mines; and 5. All other kinds of property, according to the valuation list, or other record of assessment, which was last in force during the year ending Lady-day in 1870, in each parish and union in England and Wales; also the number of separate assessments in such parishes and unions. It testifies to the greatness whereunto manufactures and commerce, and our cities, towns, and villages have grown, that buildings are assessed at a higher amount than all the other four denominations of property put together. The assessment on buildings excludes such buildings as are assessed with farms, and embraces houses, shops, warehouses, mills, factories, docks, and wharfs. The amount at which they are rated is 55,078,528*l.*, or 52·7 per cent. of the whole. Lands, including farm-houses and farm-buildings, tithe rent-charge and uncommuted tithes, are rated at 39,488,882*l.*, or 37·8 per cent. of the whole. Railways, including stations and depôts, are rated at 4,854,193*l.*, or 4·7 per cent. Mines stand for 1,829,946*l.*, or 1·8 per cent. All other kinds of property include quarries, ironworks, gasworks, canals, saleable underwoods, telegraph wires, and all property not considered to come properly under any of the other heads. These miscellaneous possessions are rated at 316,873*l.*, or 3·0 per cent. of the whole. The total assessment amounts to 104,420,283*l.*, over an area of 37,324,883 acres.

The amounts for which the metropolis is assessed are for lands, 118,836*l.*; buildings 17,108,736*l.*; railways, 617,780*l.*; all other kinds of property, 391,568*l.*; total, 18,236,920*l.* Separate assessments, 446,337*l.* In the metropolis, the City of London stands highest, as may be expected, for the value of its buildings, 2,171,292*l.*; the parish of St. George's, embracing the palatial residences of the West-end, comes next at 1,797,741*l.*; and St. Marylebone at 1,004,847*l.* St. Pancras, embracing the Great Northern, the Midland, and the Euston terminal stations, is rated for railways at 91,788*l.*; the City of London, for railways at 50,537*l.*; and Paddington at 33,300*l.* Wandsworth and Clapham are rated at 26,200*l.* for lands; Lewisham at 20,569*l.*; Fulham at 12,439*l.*; and, somewhat curiously, the City of London at 12,277*l.*; whereas Chelsea stands as low for lands as 410*l.*, and Westminster is *nil*. Liverpool is assessed at nothing for land; 1,749,929*l.* for buildings, and 36,577*l.* for railways. Manchester also is exempted in the matter of assessment on lands, but pays 990,936*l.* on buildings, and 51,966*l.* on railways. Among the largest assessments for mining property are:—Merthyr Tidfil, 159,469*l.*; Auckland (Durham), 75,483*l.*; Wigan (Lancashire), 91,943*l.*; Chesterfield, 47,818*l.*; &c. The total number of separate assessments for England and Wales is 4,793,447.

A NEW LIGHTHOUSE FOR THE HEBRIDES.

MANY of our readers will feel interested in the following account of a new lighthouse which is just upon the point of completion on an obscure rock in the Hebrides. Our chief authority is the *Scotsman*.

The Northern Lighthouse Commissioners began the erection of this tower on the wild rock of Dhu Heartach five years ago. We are now able to state that the stonework has been successfully finished; and there is every likelihood that the light will be exhibited from the tower in less than a year hence. This work is one of national importance, and has involved much spirited enterprise.

Dhu Heartach, or St. John's Rock, is a singular oblong basaltic mass, lying fifteen miles and a half south-west of Iona. It is 240 ft. in length, by about 130 ft. in breadth, with a rounded top, 30 ft. above high water ordinary spring tides. The rock rises sheer out of four fathoms of water, and is clear of everything in the shape of outlying reefs, save on the west side, where, at a cable's length, three small patches show themselves at low water. In consequence of rising out of deep water, and being unprotected by outlying reefs, it receives the full shock of the Atlantic, and proves more inaccessible than even the Bell Rock or Skerryvore Lighthouses.

But the value of a light on Dhu Heartach, although erected at great expense, will be rendered apparent by the simplest statement. From the Rhinns of Islay to Skerryvore is fifty miles. The middle part of this line for eleven miles is dark,—that is, the mariner is beyond the range of either light. Now, suppose a vessel caught in a south-west gale upon this dark line, and obliged to bear up for shelter, there is at present no light to leeward to guide it for many miles. Should it bear up to the northward, Dhu Heartach lies under its lee-beam only ten miles away, its presence marked by the seas that are breaking and roaring over it, and its terrors augmented perhaps by the darkness of a wild winter night,—while eight miles farther on, spread far and wide the West Reef and Torran Rocks, a perfect archipelago of sunken reefs, on which many a proud ship has gone to pieces and many a noble seaman found a watery grave! The only safe course at present is to steer

* "The Sheet Metal-worker's Instructor." To be had of Mrs. Warn, of 54, Marquis-road, Camden-square, London.

easterly, and try to get a hold of the bright light on Rhu Vaal, which shows over the Island of Colonsay, and keep a hold of it on for Mull, not approaching too nigh the Colonsay shore. But when once Dhu Heartach is lighted, matters will be entirely changed. Instead of being dreaded and shunned, the mariner will boldly approach it; and when obliged to bear up for refuge in westerly gales, it will form a new point of departure, guiding him safely between the Torran shoals and the Colonsay land. Not only so, but it will also form an important link in the chain of western lights, on the British Islands, and illumine for the mariner nearly 500 square miles of water, at present dark and dangerous.

The tower of Dhu Heartach, like that of Skerryvore, is built of Mull granite, and a description of the works at Erraid, where the stones have all been quarried and prepared, will help to set forth the gigantic character of this lighthouse undertaking; but this, for want of space, we must defer to a subsequent occasion.

Communication is kept up between the quarries and the lighthouse road by means of a steamer belonging to the Lighthouse Board. There is an outlook, consisting of a small circular box, perched on the top of the island, 200 ft. above the level of the sea. It is provided with a powerful telescope, 5 ft. long, mounted on a stand, and capable of being pointed either in the direction of Dhu Heartach or Skerryvore. There the sentry sits all day long, when the steamer is not at sea, watching any signal that may be made on the rock, 15½ miles distant, ready to repeat it on the flagstaff at his door. Should the men on the lighthouse rock intimate, by the hoisting of a ball on the mast of the barracks, that communication is wanted, the sentry instantly hoists his black ball on the flagstaff; and the watch on board the steamer, seeing it, at once calls the master's attention to it, and, no matter how coarse the weather may be, the *Dhu Heartach* will be seen in less than an hour breasting the swell outside of Soay.

The principal facts regarding the history of the works on the rock may be soon told. In the summer of 1867, a landing was made, and operations commenced for erecting a barrack for the workmen similar to those used in the erection of Bell Rock and Skerryvore Lighthouses, with this exception, that this was all of malleable iron instead of wood. It consists of twelve malleable iron standards, each 35 ft. long, firmly bratticed into the rock, and bound together with strong iron stays. On the top of these rests a circular barrack, 18½ ft. high, and 16 ft. diameter, reached from the rock by a chain-ladder leading up to a hatch in the floor. It is divided into two apartments, lower and upper—the one containing cook's kitchen and two small rooms for the officers; the upper, a dining-table for the men, and thirty beds ranged round the walls, tier above tier. The lower room is lighted by twelve bull's-eyes, in the sides, the other by a glass ventilating lantern on the top. This was the home of twenty-five men at all hours during night, and the narrow space in which they were shut up in bad weather, with the waves rolling beneath them, and wild winds raging around them. Though a somewhat trying situation, we have never heard that the men's confidence has been shaken as to the stability of the structure.

Towards the close of the season of 1868, the excavation of the pit for the foundation was commenced, and early in 1869 the first course was laid. Five courses were laid in 1869, twenty-six in 1870, and forty-four during the present season—seventy-seven in all. The first entire course contained eighty-four stones, the last only nine. The last stone was landed on the 16th of August, amid great rejoicings; the balcony railing was fixed on the 11th of September; and the work on the rock thereafter suspended until the summer of 1872. It is confidently expected that the internal fittings, which are nearly all ready at Erraid, will be fixed during the next season, and that the light will be exhibited from the tower before the year is done. The rapid progress of the work has greatly surprised all who know anything of the savage character of Dhu Heartach. The sea is seldom at rest around it, and it is only during the summer months that anything like regular communication can be held with it. We learn that in 1867 there were only twenty-seven days on which landings could be made on it; in 1868, thirty-eight days; in 1869, fifty-nine days; in 1870, sixty-two days; and during the present season about the same number. Some of those landings were of very brief duration. It may be interesting to know how so many stones were landed on such a wild spot during the short seasons that were available. It was attained as follows:—Whenever the men on the rock thought the wind and sea had sufficiently gone down for landing stones, the ball was hoisted on the barracks. The signal being observed by the outlook on Erraid, was repeated by him to the steamer. Instantly, all on shore was in motion; the fires on board were stirred, the loaded lighters were manned and warped alongside, the superintendent hurried down to the wharf, and in less than an hour the Dhu Heartach might be seen outside of Soay, with two lighters in tow, pushing on for the rock. Arrived there, the steamer is attached to her moorings, and the lighters are warped to buoys nearer the landing. Meanwhile, all is activity on the rock itself. Steam has been raised on the boiler of the small winch engine lying in a cavity near the base of the tower. On a signal given a lighter is run alongside of the east end, and in fifteen minutes eleven ordinary-sized stones are lifted off the barge by a landing crane, and set on the rock. Another crane lifts them on a wagon, travelling on an incline of rails up to the base of the tower. Here another lifts them off and sets them down. The second barge is unloaded as speedily in the same way. The stones are then considered safe, and more time taken to hoist them, by means of a projecting needle, to the top, and have them set in their respective places by means of a balance crane. All this process was chiefly effected by steam-power, under the special direction of Mr. Brebner, and carried on with great expedition on all practicable occasions. The success attending it has proved its efficiency.

The Dhu Heartach tower rises to the height of 138 ft. above high water. The shape is a hyperbolic curve—one which secures more than any other lowness of the centre of gravity and direct action of the weight of the mass on the base. It is to be remembered that the stability of these towers depends on weight, not on rigidity, and that the great object of the engineer is to secure the perpendicular pressure of the superincumbent mass on the base as far as consistent with other interests. Hence the engineer's idea is that of a monolith with cavities, and with this object in view, stone is joined to stone and course to course by various mechanical devices. In the lower courses the stones are joined by angles, curves, joggles, and bolts; in the upper courses, by bolts, clasps, lewisses, and ribbon joints. Between each stone, throughout the whole structure, the most tenacious cement is employed; so that when finished, the whole column may be said to be one stone, with certain cavities of a definite form and for a definite use. The tower is solid for 31 ft., and the doorway at that elevation is reached by a gun-metal ladder batted into the wall. Above the doorway there are seven apartments, rising in succession the one above another. When the history of this great undertaking comes to be fully written, it will take its place honourably beside those noble treatises which narrate the history of the construction of the Bell Rock and Skerryvore towers.

Some commendation is also due to Mr. Alan Brebner, the resident clerk of works.

PATENT HYDRAULIC BRICKMAKING MACHINE.

A MACHINE, constructed by Mr. G. W. Hick, of Leeds, engineer, is described and illustrated in the *Engineer*. It consists of a revolving table, containing three moulds, and also of as many pressing cylinders, with their accompanying rams and plungers. This table is made to revolve intermittently. This intermittent motion of the table is effected by means of a loose ring fitted so as to work freely round the circumference of the table. The ring has a reciprocating motion imparted to it from a small water cylinder and ram. The working parts consist of direct-acting pistons and rams, carrying plungers or pressing-blocks, the pistons, rams, and cylinders being kept watertight by hydraulic leather packing.

On the feed-mould being charged with clay from the hopper or pug-mill placed over the table, it is carried forward by the ring one-third of a revolution, thus presenting the contents to the pressing action of two plungers actuated by separate pistons and rams—one plunger being forced downwards upon the upper surface of the brick, whilst the other is being forced upwards or against the underside of the brick, both situated and working in a cylinder cast with the bed of the machine; thus the brick is effectually pressed. The mould containing the pressed and moulded brick is then brought over and opposite to another plunger placed in the lower bed of the machine, and called the delivery plunger, and also a fresh charge of clay is submitted to the pressing plungers. Simultaneously with the *pressing* of a brick the *delivery* of an already pressed brick is accomplished. The mould thus emptied by the delivery plunger is again filled with clay from the hopper, so that three bricks are moulded, pressed, and delivered during one complete revolution of the machine.

MEMORIAL OF THE DUCHESS OF SUTHERLAND, DUNROBIN.

A COMMENCEMENT is about to be made with the erection of a monument to the late Duchess of Sutherland, which has been subscribed for by the tenantry on the Sutherland estates and others. The monument has been designed by Mr. John Robinson, and its execution has been intrusted to Mr. John Rhind. It is intended to be placed on a rising ground within the policies of Dunrobin Castle, and the white freestone for its construction will be supplied by the Duke from a quarry near Dornoch, and conveyed to the site by his grace's traction-engine. The monument will be a symmetrical structure, rising to the height of 40 ft., and in its outline bearing a sort of general resemblance to the monument erected at Dunkeld in memory of the late Duke of Athole. From a basement of three steps, covering a space 17 ft. square, the structure rises as a square mass of masonry, buttressed at each corner, relieved with horizontal mouldings, and finished at the top with a richly-carved cornice. Over this rise (one from each corner) four pillars, with grouped shafts and carved capitals. Externally the pillars support on each of the four sides a cusped arch, over which rises a crocketed gablet, terminating in an ornamental finial, and inclosing a triangular panel, intended for the display of monograms and armorial bearings. Internally the pillars are connected by groined arches, forming a sort of canopy, under which, and within the pillars, is to be placed a bust of the late duchess, executed by Noble. Above the gablets, between which pinnacles spring from each corner of the structure, the monument presents another stage of solid masonry, square in form, and having at each corner a round pillar with enriched capital, which, however, stands clear of the central block. Next comes a second open stage, consisting of eight pillars of various forms. On each side the pillars support a crocketed gablet, filled in with diaper-work, and between the gablets pinnacles rise from the corners as in one of the lower stages. From between these upper gablets springs a central spire, which, gradually tapering off, terminates the work with a crocketed finial and cross. In the execution of the monument a considerable practical difficulty has to be overcome. The four pillars forming the lower open stage must support the whole weight of the superincumbent stages, and, in the absence of buttresses, it is necessary so to adjust that weight upon the arches as to avoid lateral thrust.

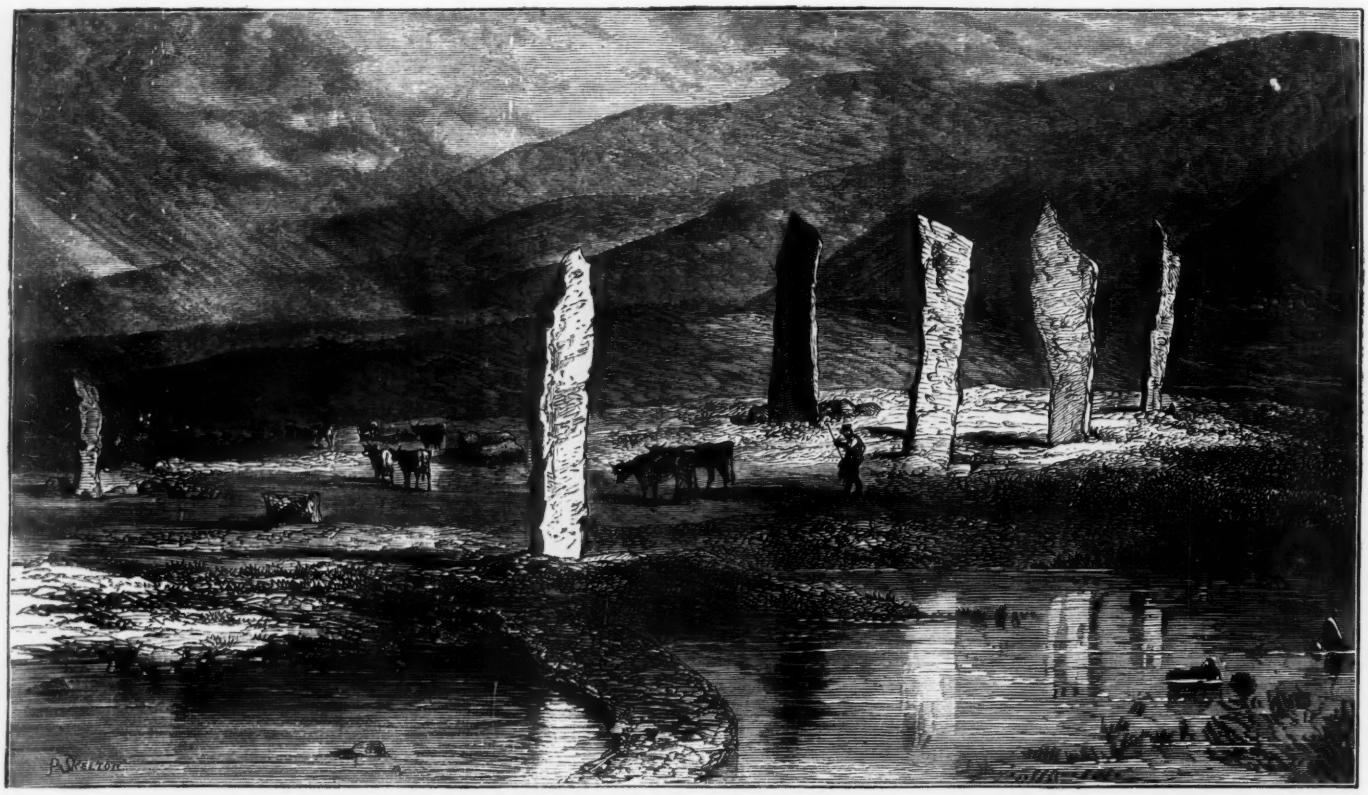
MONUMENT OF THE DUCHESS OF SUTHERLAND, IN TRENTHAM CHURCH.

IN our volume for 1871* we gave a description of the marble effigy of Harriet Duchess of Sutherland, wife of George Granville, second Duke of Sutherland, executed in marble by Mr. Matthew Noble, sculptor, and which has recently been placed in Trentham Church. We publish in our present issue an illustration of the monument.

The tomb on which the effigy rests is executed in Sicilian marble, the cornice being supported by six columns, between which are square panels containing the inscriptions. The centre one, in Latin, was written by Mr. Gladstone, and fully quoted in our former account. In the foliage of the caps of the columns and in the cornice are introduced the heucherus and other flowers. The tomb was designed by Mr. John Robinson, architect, of Whitehall-yard, and executed by Mr. Earpe, of Lambeth.

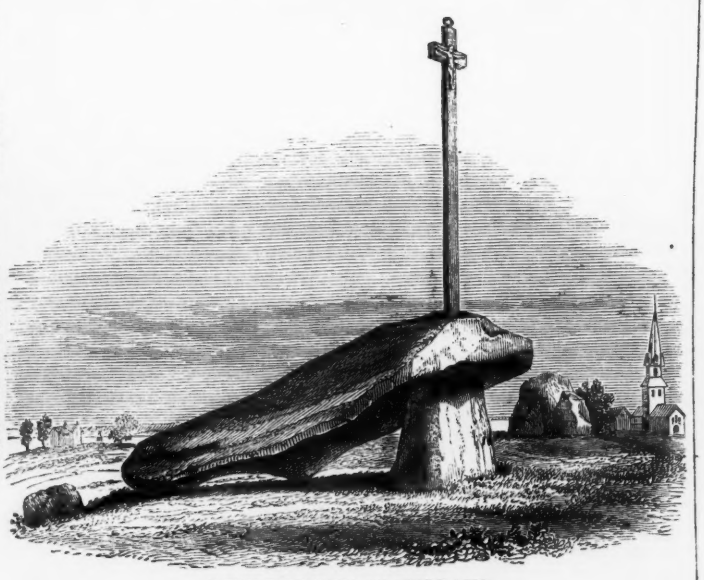
* See p. 750.

RUDE STONE MONUMENTS.

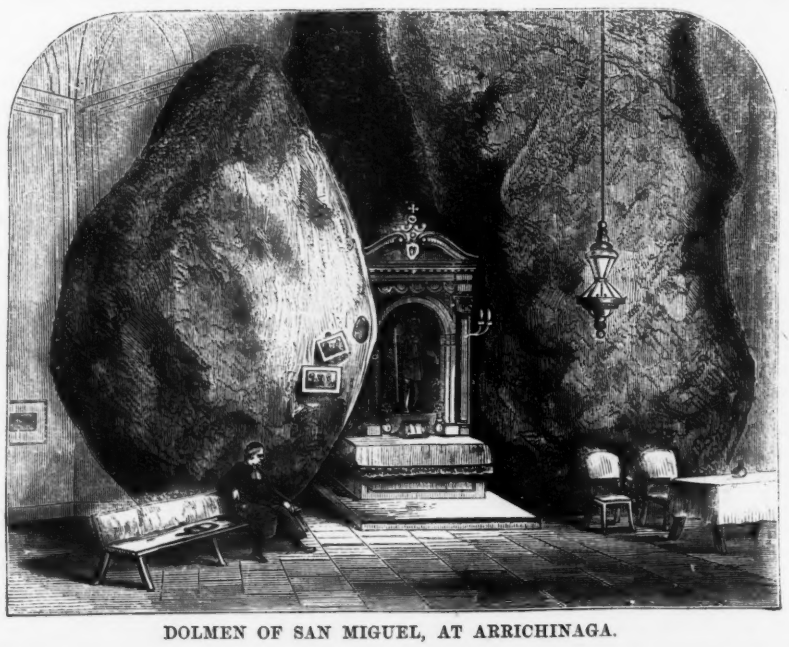


THE STANDING STONES OF STENNIS.

DOLMEN AT CONFOLENS.



DEMI-DOLMEN AT KERLAND.



DOLMEN OF SAN MIGUEL, AT ARRICHINAGA.

[See p. 77, *ante*.

MONUMENT OF HARRIET, DUCHESS OF SUTHERLAND, IN TRENTHAM CHURCH.—MR. JOHN ROBINSON, ARCHITECT; MR. NOBLE AND MR. EARPE, SCULPTORS.

THE PROGRESS OF THE PEOPLE.

MR. ALEXANDER REDGRAVE, principal inspector of factories, recently delivered a lecture in Bradford, wherein he gave some remarkable evidence as to the social progress of the people of this country. "Contrast," he said, "the prices of food and clothing of to-day with those which ruled thirty years ago. Contrast with them, at the same time, the relative power of increased remuneration to pay a higher price for necessaries, I will not say luxuries, formerly not dreamt of. The following figures will enable us to imagine the position we would have been in with an increased population, having greater powers of consumption, but for free trade. This is the sum of the food imported into this country in 1870:—Animals, 4,155,463*l.*; corn, &c., 19,732,879*l.*; other provisions, 15,847,401*l.* Corn has ruled much lower than it did thirty years since, but meat has risen considerably, principally, I believe, from the enormous increase of meat-consumers in the country. The high rate of remuneration has enabled families to consume meat constantly who formerly only consumed it occasionally, and many who never consumed any can now afford to eat it frequently. But if meat has risen in price, tea and sugar have fallen greatly, and chiefly through the application of the true principles of taxation. Taking tea, in the first place, we find that in 1841 the duty was 2s. 1d. per lb., that the consumption per head was 1 lb. 6 oz., and the annual contribution of each person to the revenue was 2s. 11d. Coming now to 1870, we find the duty 6d. per lb., the consumption per head 4 lb. 10 oz., and the contribution to the revenue of each person was just 2s. 4d. per annum,—the revenue for the year being 2,940,000*l.* Then, again, with respect to sugar. In 1841, the duty upon sugar was 24s. per cwt., the average consumption per head was 17 lb. 8 oz., and the contribution to the revenue per head was 3s. 10d., the revenue being 5,114,390*l.* In 1870, the duty would average, according to quality, rather more than 5s. per cwt., the consumption per head was nearly 54 lb., and the contribution per head to the revenue was about 2s. 6d.,—the revenue, notwithstanding the reduction of the duty one-half over the last nine months of the year, was just 4,000,000*l.*"

"We must look to all classes in considering the social condition of the people, and not only to those who live by labour. It is the aim of all classes to reach, at the least, the class immediately above them; and if we compare the taxes upon luxuries during the last thirty years, we shall see how far the middle-classes must have been augmented. For instance, it appears that in 1840, there were 318,251 horses charged with duty, exclusive of agricultural horses, which were exempt from duty. And notwithstanding the all but total extinction of stage-coaches and posting in 1870, there were in that year 744,906 horses charged with duty. In a similar manner, there is a comparison of the number of men servants and carriages kept, and of the consumption of wine—three elements of a well-to-do household. In 1841, there were assessed for duty 101,849 men-servants, and in 1870 the number was 267,671. In 1841, there were assessed for duty 28,334 four-wheeled carriages; in 1870 the number was 132,331. In 1841, the number of two-wheeled carriages was 41,663, and in 1870 the number was 249,991; and the persons charged with keeping such carriages were, respectively, in 1841, 34,694; and in 1868, 59,190. Again, taking the consumption of wine, an element of luxury and health, we find that the average consumption per head, in 1841, was a little more than one-fifth of a gallon, while in 1870 it had risen to half a gallon per head. Again, if we take the game licences, we find that they were, in 1847, 39,373, and 2,694 keepers; and in 1869, 54,203, and 4,921 keepers. But we may yet illustrate the increased wealth of the middle classes by an examination of amounts paid to legacy and property duty. In 1841 the capital subject to legacy duty was 41,476,521*l.*; and in 1869 this sum was more than doubled, for it amounted to 87,721,152*l.* The amount of property and income charged with duty in 1843 was 204,868,035*l.*; while in 1869 it was 386,549,366*l.* This is an enormous increase, even after allowing for the tax in Ireland, which did not come into operation until 1853. Another great advance has been the facilities for intercommunication by cheap postage, and for the diffusion of intelligence by cheap newspapers. In 1839 the number of letters delivered was 99,014,156. In thirty years the number had increased to 831,914,000. In the latter year also a sum of upwards of 19,000,000*l.* passed through the money-order office, and 2,727,763 letters of importance were registered. Since 1869 greater and very important facilities have been put into operation. The postage of letters, parcels, and newspapers has been re-arranged in favour of the public, and postal cards have been issued. That these arrangements have met a want will be credited by the fact that from the 1st October, 1870, to the 31st March, 1871, upwards of 58,000,000 post-cards have been issued, and upwards of 140,000,000 halfpenny labels and stamped wrappers. Cheap newspapers are of very recent introduction. For years the excise on paper, the stamp on newspapers, and the duty on advertisements, rendered a cheap newspaper impossible. But gradually each impost gave way before the more enlightened views of the statesman of modern days, and the press is unshackled; and what has been the result? In 1841 there were 134 newspapers in London, and in other parts of England and Wales there were 244, and in Scotland and Ireland, 167—total, 541. The number of stamps issued in the year was 59,936,897, which, as all newspapers were stamped, represents the number issued. At the present there are published in London 30 daily papers, upwards of 200 papers issued weekly, or at intervals within a week, and about 760 periodicals, partly of the nature of newspapers, partly of magazines, appearing at intervals from once a fortnight to once in three months. The number of provincial, Scotch, and Irish papers is 1,158, and the number of papers and periodicals registered for transmission as newspapers is upwards of 1,000."

THE COVENT GARDEN WHOLESALE FLOWER-MARKET.

THIS mysterious establishment is undergoing extensive enlargement by Messrs. W. Cubitt & Co. When completed the area of the market, we are told, will be more than quadrupled. The new market will extend from the boundary of the old building in Covent Garden to Wellington-street, being about 200 ft. in depth, and its extreme width in the centre about 160 ft., altogether covering an area of about 3,000 square yards; and in order to effect this extension, it has been found necessary to demolish a considerable amount of property in Wellington-street and the immediate neighbourhood. One of the main entrances will be in the last-named street, in addition to that in Covent Garden. The basement has been excavated to a depth of from 12 ft. to 15 ft. below the ground-floor of the market, up to which eight square brick and stone pillars rise, and on these pillars are placed iron columns ascending to a considerable height connected with semicircular arches at the summit between each column. The building will be carried up another story resting upon these columns and arches. The roof will to a great extent consist of glass, in the centre of which there will be a lantern. The entire basement will be arched over, and set apart for vaults and stores. We do not hear of any architect in connexion with the work.

DOMESTIC STAINED GLASS.

A PAPER was read on this subject by Mr. Lewis F. Day, at a meeting of the Architectural Association, held on Friday evening, the 26th of January. The small number of precedents in old domestic stained glass, as compared with those in church windows, was first noticed. From it was now resulting at first sight an increase of difficulty in this class of the glass producer's work,—perhaps compensated for by the necessity of attending to principles sought and obtained at first hand, stimulated in some degree by the stricter critical judgment shown towards novel works intended to be constantly seen in the ordinary daily course of life of their individual owners. The old glass may, however, be looked on as furnishing a large set of experimental processes;—specimens of methods partly or wholly successful pursued in the detail and execution of old glass; and brush painting in old times, which might be illustrated also by the Etruscan vase paintings executed in many respects under similar conditions. Viewing, then, the introduction of non-transparent glass in houses as a device primarily for hiding the view from without or within, Mr. Day treated in detail the characteristics of quarry glazing, and the opportunity afforded by bands, borderings, tints, &c., of giving character, and that value resulting from the evidences of thought and design in fitting the work for a special position. To the introduction of tints in patterns there would be no objection on principle; but an intelligent haphazard arrangement was, he considered, in practice, more satisfactory, on account of its greater variety under happy accidents of lighting. Of plain glazing,—after an allusion to the success of the early Cistercian architects in this kind of work, so often mentioned with much appreciation by Mr. E. Sharpe,—the lecturer stated that here again the appearance of fresh design was indispensable, in order to obtain real beauty and interest. Diaper panels arranged in parts only of a window, in a framing of emphatic lead lines, borders, &c., he considered preferable to the large single sheets of glass, rather too uniformly insisted upon now-a-days; smaller pieces, besides the great advantage of giving scale to a building, allow of decided definition of important forms, and the leading indicating the pitch of the design (as a note in singing), also of changes of tint; and (a not unimportant detail), the loss is often less radical in case of breakage. As to painted quarry-work, highly conventionalised work might be repeated in running patterns with propriety; but, in cases of a near approach to nature, such repetition seems to strike a wrong note; a bird or an animal (any piece of animated nature, in fact) may supply a most effective addition to the interest, which will be all but lost, or worse than lost, if any idea of mechanical mindless repetition is conveyed to the observer. Mr. Day then suggested a scheme of decoration for the windows of a house with purely floral forms, bearing a relation to the uses of the different rooms: quarries of tobacco-plant conventionalised in smoking-room; coffee and tea in breakfast-room; noting, by the way, the suitability of the forms of these and other plants for similar decoration. Heraldry, also, though not particularly to be recommended for church windows, he considered might be oftener used with effect and some meaning in domestic work: suggesting that a plan adopted in old glass at St. Pierre's, Chartres, of countercharging the colours of the background with those of the coat, might be applied in new work: he did not know that it had been hitherto. Some of the heraldic windows at the Houses of Parliament he considered excellent. Treating of a still higher class of design for glass, with figure subjects in medallions, &c., he thought that strongly-coloured and pronounced works, such as those in the windows at Chartres, might be compared to fresco painting; whereas suitable decoration for residences would be more properly compared to water-colours,—less forcible and more expressly elegant and refined. Backgrounds, landscape, and distances seemed quite out of place in very dignified monumental (church and similar) work, but not inadmissible amid the nearer approach to ordinary nature in domestic work. The cost of glass, felt as a drawback sometimes to its introduction, he thought might be usefully reduced by the adaptation of replicas of medallions, if not carried too far. An *entirely* special design was often quite unnecessary; and the vulgarity of mere manufacture could be avoided by constantly fresh adaptations of existing materials. It perhaps might be advisable—though he hoped hardly necessary—to insist on complete translucency,—a distinct glassiness being a most pleasing feature in a window, however it may have been turned into a thing of beauty, in the endeavour to modify, or to subdue or soften, the daylight passing through it.

In the dicussion following the paper, Mr. R. P. Spiers called attention to the windows at St. Jacques, Liége, containing good figures, showing a grandeur of treatment, having, however, the later characteristics,—large pieces of glass, &c. He thought that in domestic work the safest counsel would be to use as much white, or nearly white glass as possible; not to distribute much colour of any strength.

Mr. G. H. West noticed that objections were sometimes made, not entirely without reason, to the stained glass in the upper portions of domestic windows, now apparently growing in use: introduced for purely decorative reasons, it, nevertheless, cut off most of the sky view. He observed also that in cases where patterned obscured glass was required, all the effect, and an increase of safety, and the warmth of double windows, and perhaps in many cases a needful non-interference with symmetry, could be obtained by glazing with plate-glass outside the stained glass. He thought the attention, espe-

cially of students, might be usefully called to the chronological series of stained glass windows at the museum at Rouen; also to the early glass in the choir-aisles of the cathedral; later glass in other churches, and still later also (large fine pictures on glass), at St. Patrice's, for instance, in that city. Such quantity and quality of glass combined, he believed, did not exist anywhere else. Another member remarked on the substitution of stained glass in gilt leads, for the dwarf muslin curtains or wire blinds formerly in use, in windows adjoining streets, considering this an intelligent and pleasing use of the material probably destined to become very universal. After some other criticisms on points of detail, the meeting separated, having passed a vote of thanks to Mr. Day for his paper.

WORCESTER GUILDHALL RESTORATION.

AT a recent meeting of the Survey, Buildings, and Property Committee, several letters suggesting arrangement of rooms, &c., were read, one proposing a large room for holding Oratorios in, in case the cathedral should ever be refused, and another that the hall should be carried further back. Ultimately the committee decided in reference to the reconstruction scheme of 9,000*l.* to submit to the architects sending in plans the following suggestions:—A large hall, about 4,000 superficial feet in area; Council-room, available also for conferences or small meetings, 1,000 ft. to 1,500 ft.; five rooms for committees, &c., from 200 ft. to 400 ft. each; Recorder's Court, about 1,200 ft.; Police Court, about 1,000 ft.; four closets, lavatories, &c. For the larger or 18,000*l.* scheme the above, with instructions for a larger hall than before specified, and additional offices for Town Clerk (four rooms), Clerk to Magistrates, Treasurer, Nuisance Inspector, Street Inspector, Hall Keeper, &c. The general arrangement to be left to architects sending in plans. City Surveyor to furnish lithographed ground plans of Guildhall and adjoining buildings.

NEW RESERVOIR AT LAKENHAM FOR NORWICH WATERWORKS.

A SECOND covered reservoir has been completed and opened at Lakenham. A stock of 3½ million gallons can now always be kept in readiness for the supply of the city. The first covered reservoir, erected about a year ago, is 128 ft. square, and 17 ft. from floor to roof, and was constructed on the principle of groined arches carried on independent piers, sixty-four in number, the outer walls for strength being made to form a series of bays, with half dome roofs. This system of bays is preserved in the new reservoir, so far as the outer wall is concerned; but a different principle is adopted inside, presenting a series of eight arched passages, the walls of which are pierced by corresponding side openings, and strengthened at intervals by buttresses. It is 128 ft. long, by 120 ft. wide, and has a depth of 18 ft. below the water line, and is thus capable of holding about one-third more water than the first, or "Sultzer" reservoir, which contains 1½ million gallons.

Both reservoirs are from the designs of Mr. Hawksley, the company's consulting engineer, and have been constructed by the company, under the superintendence of their manager, Mr. Ayris, Mr. W. H. Bishop acting as clerk of the works.

EXTENSIVE NEW RAILWAY STATION IN LIVERPOOL.

ONE of the largest railway stations in the north of England is now in course of erection at Liverpool for the Midland, Great Northern, and Manchester and Sheffield Companies, who jointly have just constructed a new line of railway between Manchester and Liverpool, so as to give them a separate and independent through communication between London and Liverpool without using the London and North Western Company's line from Manchester to Liverpool. The new line is about to be opened for traffic, and the new station in connexion with it, which is situated in Ranelagh-street, almost in the centre of the town, and called the Central Station, is rapidly approaching completion. The Ranelagh-street elevation is 310 ft. long, having a spacious area in front, somewhat resembling the Charing-cross Station, and has a commanding appearance. The station buildings are extensive, containing the booking-office, waiting-rooms, managers' rooms, and the general offices of the several companies; also ornamental lodges, a carriage drive under a glass roof to the booking-offices, parcel-offices, and large dining and refreshment rooms. The interior of the station itself is very spacious, being 620 ft. long, whilst the entire area occupied by the several platforms and various lines of rails, is upwards of six acres in extent. The station is covered in by a massive roof, consisting of eleven elliptical spans, each 55 ft. wide, and extends the entire length of the station—620 ft., the area covered by the elliptical spans being 169,000 square feet. The extreme length of the station, station buildings, and approaches, is 838 ft., and occupies an area of upwards of seven acres. In order to secure the site for this large structure, a considerable quantity of very valuable property had to be purchased, including, amongst other premises, extensive new buildings and offices which had only quite recently been erected by the gas company, also several hotels, besides a large number of private houses and business premises, the amount which the companies have had to pay in compensation being very heavy. The station and buildings in connexion with it was designed by Messrs. Fowler & Brydone, of Victoria-street, Westminster, the engineers to the three associated companies; and the works are being executed by Messrs. Kirk & Parry, of Queen-street, Westminster, and Sleaford, Lincolnshire; the contract being something more than 100,000*l.*

DAMP WALLS.

SIR,—It was with much interest that I read "Devonia's" letter upon this subject, knowing the importance of it to him and many others situated in that and other exposed parts. Having a knowledge of the climate of that wild district, Dartmoor, I am aware of the difficulties that he would have to contend against to build a damp-proof house. I have often wondered that, in a county like Devonshire, having such a fine store of beautiful building-stones as it has, some more effectual means have not been used or attempted to ensure weather-proof walls, than the unsatisfactory battening, or hiding and disfiguring, the fine appearance of the stone by stuccoing or slating.

The usual method of building in those parts, I believe, is to construct external walls 18 in. or 21 in. thick (generally of granite and other native stones), in random courses, and specified to be well flushed up. After such walls have been so constructed and well pointed externally with cement, I have seen the wet running down the interior of south and west walls in streams, and dripping from the window-heads on to the window-boards, showing that the rain, accompanied as it generally is with high winds, drives through the granite, and gradually runs down the inside of the wall, making its appearance over the first opening, or out at the most convenient joints. If the floor-joists should have a bearing in those walls, or even if the flooring-boards run through to the stonework, it is surprising the quantity of wet they intercept, and this spreading over the floor, the consequences in course of time may be readily judged.

What I would propose and recommend (learnt from that large school, experience) is to build outer walls by either of the following methods,—viz., to build an outer course of stone, 10 in. thick, and an inner course 8 in., leaving a space of 6 in. between, which is to be filled up with Portland cement concrete, well flushed into the interstices of each course of stones, and, when required, special perpent stones, selected for their non-absorbent nature. The other method that I have seen adopted is to build cavity-walls, bonded together by a special perforated non-absorbent bond of bricks. In some cases I have known the interior course to be carried up in brick.

In the latter method, cavity-walls, an additional expense is incurred by the necessity of laying lead over all openings; also great care is requisite to select non-absorbent bond.

Seeing, as I have, many proprietors and architects spending large sums of money in erecting buildings of this class, in the districts alluded to, many of them excellent pieces of workmanship to look at externally, but, through not being built upon a proper principle, dangerous and unfit to live in, I am impressed with the importance of the subject.

The different nature of the climate in those parts does not seem to have been provided against in modern buildings so effectually as in existing ancient ones; and, as in most other cases, anything new, although commendable, is held in distrust.

TAVISTOCK.

SIR,—Under the heading "Damp Walls" I observe a letter in your last issue. Being intimately acquainted with Dartmoor, also with the "fire-proof bricks" made in the locality, and, further, with the granite, from the disintegrated particles of which these bricks are made, I am not surprised that "Devonia" found his house like a "sieve," having adopted pretty sure means to that end.

It does not follow that a "fire-proof" brick is a "damp-proof" one, the very opposite being the fact; viz., that a good building brick, *i.e.*, one that is "damp-proof," will be an indifferent fire-brick, and *vice versâ*. The granite of Dartmoor is by no means damp-proof, and there is nothing in the manufacture of bricks from the disintegrated constituents of this granite to remedy the evil.

May I suggest two courses which your correspondent may now adopt, with, I will venture to say, success?

First, apply *three* coats of *damp-proof* paint, which contains neither white-lead, nor whitening. Such a paint is certainly to be obtained, and would stand for many years.

Or, second, let the house be encased with damp-proof bricks, which also are obtainable. This would, doubtless, be more expensive than the paint, in the first instance, but would prove a permanent cure if properly built and pointed with good cement. If the house—as it should be on Dartmoor—is built *low*, a slight casing with numerous bonds into the existing walls would be sufficient; an air space between the casing and the walls would also be advisable.

J. D. P.

NEW OFFICES FOR THE SHEFFIELD UNITED GAS COMPANY, AT SHEFFIELD.

THE directors of this company held a meeting on Saturday last, for the purpose of selecting a design for the new offices to be erected near the new Post-office, on the approach-road to the Midland new station. The competition was strictly limited to the architects of Sheffield, and, we believe, nine sets of plans were sent in. These were, after deliberation, reduced to three, viz., those of Messrs. Hadfield & Son, Messrs. Flockton & Abbott, and Messrs. Hill & Swann. The choice of the directors fell upon the design of Messrs. Hadfield & Son, under whose care the work will at once be undertaken.

The building will have a frontage of 128 ft. to the station approach, and 103 ft. to the street called Shude-hill. It will be of stone, in the early Renaissance style, of a Venetian type, broadly treated. Granite will be used for the columns and door-case.

The principal apartments will be on the level of the station-road, and will include entrance-hall, general office, manager's rooms, show-rooms, and staircase to the upper floor, which will be entirely occupied by apartments for the Board meetings, engineer, &c.

The estimate is 17,500*l.*, and the time occupied in the building will be about eighteen months.

ACCIDENTS.

Fall of a Railway-bridge.—A railway-bridge, near Castle Ashby Station, on the London and North-Western line, gave way, owing to floods, just as a goods-train from Northampton was passing over it. No one was injured except the guard, and he was not seriously hurt.

Fall of a Boiler-house at Mossley.—A boiler-house in connexion with the mill of Mr. John Shaw, Micklehurst, has fallen, the destruction being such that scarcely a stone remained in its place. Fortunately, the workpeople had not arrived. The wind was rather high during the evening previously, and is supposed to have caused the mischief.

Fall of St. Paul's Churchyard Wall, Bedminster. A large portion of the wall bounding St. Paul's Churchyard, Coronation-road, Bedminster, has fallen. On the Southville side of the church there is a deep, steep cutting leading to the ferry, known as Ferry-lane. At the top of the lane the churchyard is but a few feet above the level of the roadway, but the incline is so steep that near the bottom the wall rises to a height of more than 20 ft. It was here that the wall,

for about 20 yards, came down bodily, and without any warning; a great mass of earth falling along with it, exposing some fifteen coffins, large and small. Prompt measures were taken for covering the coffins, and protecting the churchyard. The accident is attributed partly to disturbance of the ground, but mainly to heavy rains.

STATE OF GLASTONBURY.

SIR,—I forward you an extract of a letter I have just received with reference to the state of Glastonbury and its drainage, wherein they say, "A party went to the Glastonbury ball, and the smell in the room from the bad drainage was so offensive that one of the ladies was taken ill the next day, and is now ill in bed with fever that they fear is typhoid." How much longer is this state of things to continue in towns, estates, and private houses, and how much longer are parties to inhale poison instead of pure air, especially in the country? They have had sufficient teaching in the *Builder*, and now let them one and all take timely warning.

A SUBSCRIBER.

THE COURTS OF LAW.

SIR,—As the building for the Courts of Law will be one of the most important erections in this age and kingdom, and, if spared, of a permanent character, there cannot be too much thought and care bestowed by those who sanction the work, that it redound to the satisfaction of the public at large, and the credit of the national taste and appreciation.

I am not an architect, but have bestowed much attention upon the different styles of architecture; and, in the opinion of competent judges, have thrown some desired light in "The Basilica" (of which I sent you a copy), upon its origin, principles, and progress.

Admitting that each acknowledged style may have its merit, and, when well adapted to its object, may be raised to excellence, there seem to me certain conditions attached to every style in the construction of public buildings that should always be maintained to secure a proper effect upon the public eye, and by which the educated and uneducated are duly impressed, though the latter may not, like the former, be able to criticise the distribution of the parts.

The *tout ensemble* of each façade should have the first regard, and that should be broad, massive, and uniform, to secure, in the first instance, a fixed attention to the building as a unity, without any immediate distraction by the several parts. Without this there can be no sense of grandeur, with which every public building ought to impress the mind of the beholder, and overpower the pretensions of all the neighbouring private buildings.

The next requisite is, that the divisons should be well and boldly defined in subjection or harmony to the whole, diverging at equal distances from the centre, or principal entrance, and in perfect conformity with each other.

A diversity of parts which ought to correspond, is as if an artist should paint one eye of a different size and shape from the other—the one round and large, the other small and elliptical. The openings also should be level. When otherwise, it is like putting one eye an inch or more lower than the other. In many recent buildings symmetry appears to have been purposely dishonoured.

Let any one judge of the effects of architectural construction by the proportions, and harmony, and correspondences of the human frame, for the most famous writers on the subject have seized upon this analogy.

Next, and subordinate to the principal divisions, should be the ornamentation in high relief and deep incisions, decorative without being finikin; for the observation of the beholder should be calmly and leisurely withdrawn from the admiration of the contour to the appreciation of symmetry, grace, and proportion.

Stone of a firm texture and bright appearance is the best adapted to all public buildings. Brick requires ample stone dressings to be at all impressive, and even then is inferior to stone.

Any one who notices the banquetting-room at Whitehall, Spencer House from the Green Park, Somerset House, and Greenwich Hospital, will be struck with the impressive and superior aspect which they respectively present in comparison with all neighbouring buildings. What, then, was my amazement and disappointment on seeing the representation of Mr. Street's buildings for the New Courts of Law, to find that not one of the essentials described above was observed; but a jumbledom of a confused, incongruous multiplicity of diverse buildings, huddled together like "a happy family" of various animals, without head, subordination, or consistency!

Mr. Street is no doubt an able architect, capable of all that is required to construct a suitable and homogeneous building; but he seems to be a victim to the prevailing taste and purport of the last thirty or forty years, which is coeval and consonant with the Oxford movement, the immediate object of which was to Mediævalise everything, outwardly and inwardly, in accordance with the most corrupt period of the Romish Church. It is seen to a certain amount in the sister art of painting, and in all the grotesque revivals in wood and stone, brick and metals, and in all textile fabrics, to the delight and exercise of many imaginative ladies and feminine young gentlemen.

I hope there is too great a sense of propriety and of national feeling to suffer such a higgledy-piggledy style of building to be erected for the Law Courts of this kingdom,—to be unfavourably contrasted with all the public buildings of ancient nations, and those of all the capitals of Europe. The freaks that are played with the roofs of this jumbledom combine all the worst features of a French capitation. Turkish cupolas and minarets would be far more agreeable.

CHAS. FRED. WATKINS.

IMPORTANT LAW CASE.

O'GRADY *v.* THE RIGHT HON. E. CARDWELL.

IT was sought in this case to recover damages laid at 500*l.* on foot of a contract to execute certain works at the barracks of Athlone, Ireland, which had been entered into by the plaintiff with the defendant as her Majesty's principal Secretary of State for War. The motion was to set aside two defences which it was alleged contained averments of a nature to make it uncertain whether the defendant intended to rely on the fact that the contract was an official contract, and that it was concluded under circumstances which rendered it not binding on the defendant personally. It was further alleged that the remedy of the plaintiff, supposing him to have any, was by a petition of rights. The court refused the motion with costs.

A word or two may be said in relation to this case. The employment of the plaintiff was certainly by Mr. Cardwell in his official capacity, but does this bar recovery of a claim, supposing it to be just? As this action is outside the region of politics, and the question at issue is a most important one to the building and architectural interests, we have a right to ask to what tribunal is the defendant responsible if not to the public ones? The plaintiff's counsel sought in vain to have the pleadings set aside, but the Court of Exchequer held that the defence was *primâ facie* a good one.

The matter can scarcely rest here, for it will assuredly make many contractors hesitate in future before entering into a contract with officials if such decisions are to be anticipated in case of dispute. It is not a matter of Irish, but British interests. There is no plea of exorbitant charge or badly-executed work. There is only the plea of non-responsibility. Consequently the disputed claim, without any settlement, falls to the ground, because the action must not be against the Secretary for War in his official capacity.

The comfort to be obtained by a plaintiff on resorting to a remedy by a petition of rights, we fear, is very small, for he is only vouchsafed the hint by the counsel for the defendant that a remedy possibly may exist in that direction.

THE LONDON AND NORTH-WESTERN COMPANY'S NEW PASSENGER STATION AT BOLTON.

IN connexion with a new line of railway between Bolton and Manchester, which the London and North-Western Company have just completed, and are about to open, in addition to the present line belonging to the Lancashire and Yorkshire Company, the former company are now erecting a large new station in Great Moor-street, Bolton. The building is an architectural structure, and of large dimensions. It contains a commodious block of offices, standing on high ground considerably above the street level, which are ascended by a bold flight of steps, and at the south end of the station there is a spacious covered carriage-way. Four lines of rails are carried into the station, two on each side of the platforms; whilst, in addition to these, on the east side, there is a long coal siding for this department of merchandise traffic, the line of country through which the new railway passes opening out a large and important area of the Lancashire coal-field which has not hitherto had the advantage of railway communication. The cost of this new station is 45,000*l.*

THE NINE-HOURS MOVEMENT.

AT a meeting held at Manchester, on Tuesday, 23rd of January, of the representatives of the General Builders' Association, and of the builders' associations of Hull, Liverpool, Halifax, and other towns, the following resolutions were passed:—

"That it is desirable that some uniform time should constitute a week's work in the building trade throughout the country. In the opinion of this meeting, 54 hours a week in summer is a proper and not excessive time, and this meeting agrees to assist in carrying out such an understanding wherever the question may arise."

"That this meeting thinks it a duty to advise architects, surveyors, and others interested in the erection or maintenance of buildings, of the enhanced cost of building materials and workmanship, in many cases consequent on the reduced hours of labour and the increased rate of wages."

"That this meeting desires to express its opinion of the great value of the Act of last session as a means of protecting labour from trade-union tyranny. And that in view of the attempts being made to obtain the repeal of that Act, a circular embodying the views of builders be prepared, signed by the chairman of each association in the trade, and sent to every Member of Parliament immediately upon action being taken in the House of Commons."

At a special meeting of the London Builders' Society, held on the 29th ult., to consider the circular addressed by the operative stonemasons to their several employers, it was resolved—

"That, having carefully considered the request of the 'Operative Stone Masons' Society in London and District,' to 'continue the nine hours' system all the year round' and 'to increase the rate of wages from 8d. to 9d. per hour,' the employers present are of opinion that any diminution of the hours of mason's work during the summer months is unnecessary, and would cause great inconvenience and public dissatisfaction. The present working hours, as proposed by the Operative Stone Masons last October, and agreed to by the employers, do not exceed an average of fifty-four hours per week, all the year round."

"That the wages of all artificers employed in the building trades, including stone masons, have been increased three times within the last ten years, and there is no cause shown why a further advance should now be made, nor does the state of trade warrant any such step."

THE WORCESTER SCHOOL BOARD AND THE PLANS FOR NEW SCHOOLS.

SIR,—Would you be surprised to hear that the authors of the three selected designs for the above carry on business within eight miles of the "faithful city?" Also, would it further astonish you to know that there is reason to believe that the estimates for the three said designs emanate from a firm of builders whose father was personally thanked by his colleagues (members of the Board) for "educating" the said members of the Board as to the respective merits of the designs submitted?

DIES NON.

A BUILDER'S COMMISSION AS AN ARCHITECT.

IN the County Court at Tunbridge, in the case of Dove *v.* Smith, which was an adjournment from the November court, the plaintiff was a builder of Tunbridge, and the defendant a grocer of the same place. Since the summons was issued, defendant died, but the executors' names were substituted. Mr. Cripps, for the plaintiff, stated that the action was brought to recover 17*l.*, remuneration for services rendered to the late Mr. Smith. The evidence on the part of the plaintiff was to the effect that Mr. Smith and Mr. Annison (Mr. Smith's father-in-law), called upon the plaintiff, and Mr. Smith told him he was desirous of building a house similar to the one built for Mr. Annison, only with the addition of a bedroom. He inquired the cost, and plaintiff said he could not say unless he first prepared the quantities. He then told plaintiff to do this so that he might state the cost, and if he found he could build it for 900*l.*, he should have the job. He made out the quantities, and informed Mr. Smith he could do it for 850*l.*, and submitted the plans to him and Mr. Annison. The plans were regarded as satisfactory, but shortly afterwards circumstances transpired which induced Mr. Smith to leave Tunbridge for Maidstone, and on his return in the spring he inserted an advertisement inviting tenders for the erection of two houses on the site of the one the plans, &c., of which had had been prepared by plaintiff, who, therefore, had no remuneration for his services. Plaintiff said there was no written agreement; but a verbal contract was entered into that he should build the house for 850*l.* He might have sued for the whole amount of the contract, but he did not choose to be harsh. He only charged 2 per cent. for taking out the quantities, but he was entitled to charge for the plans separately. Mr. Smith's evidence was taken by the Registrar of the Hastings County Court. It was to the effect that he had some conversation with the plaintiff about building a house. Mr. Annison produced the plans, and the plaintiff

said he would draw out a rough sketch, or words to that effect, of the alterations required. Plaintiff took away Mr. Annison's plans, and afterwards brought a sketch stating that he could build the house for 850*l.* He heard nothing further from the plaintiff until he received a letter from him enclosing his charges for commission, but plaintiff was simply asked to give an estimate, and not produce plans. Mr. Smith denied that he ever had any plans in his possession belonging to the plaintiff. If he had wanted plans he should have gone to an architect for them.

The Judge said the real point was whether plaintiff was instructed. If he was he ought to be paid.

Mr. Warner, for the defence, submitted that if it had been necessary to get out plans and quantities the plaintiff himself took the trouble on speculation of getting the job to do; and that Mr. Smith merely asked for an estimate, not supposing that the plaintiff would be put to any expense.

Mr. Annison, called for the defence, stated that the plaintiff was merely asked for an estimate. After the advertisement inviting tenders was published the plaintiff told witness that he would have nothing at all to do with the work because the plans had been prepared by a man named Allen (whose misfortune was that of having been reduced from the position of a Government architect to a journeyman carpenter). He understood that the late Mr. Smith had offered plaintiff 5*l.* or any just sum.

His Honour thought, in the face of that offer, the late defendant intended to have paid the plaintiff. He should therefore give a verdict for 10*l.* and the costs.

THE THANKSGIVING DAY AND WORKMEN.

SIR,—As it is proposed that the Day of Thanksgiving for the recovery of the Prince of Wales shall be a public holiday, and if workshops are to be closed, workmen must, of course, lose their day's work, which is a great hardship, and a matter for the authorities to consider whether it will conduce much to loyalty; will you not use your influence that it may be deferred until Easter Monday, when workshops are generally closed? Thus the workmen would not lose an extra day's pay, but rather would be able to contribute some small thank-offering towards the decoration of St. Paul's or the funds of an hospital, and then there would be no chance of discontent from loss of money occasioned by compulsory loss of work.

The question affects some thousands of workpeople. Persons whose salaries go on all the same whether they work or play, may not know that in the case of mechanics, and labourers, and many others, no work means no money.

J. H. BARTHOLOMEW.

ASPHALTE PAVING.

SIR,—Your attention, for humanity's sake alone, is invited to the annexed letter taken from the *Telegraph* of January 30th.* The same experimental description of roadways in Holborn, opened for traffic on August 1st, 1870, is now in such a condition, notwithstanding the constant repairs that have been made in it, as to necessitate its removal or entire reconstruction. Over this piece of road innumerable poor animals have fallen, and no less than sixteen poor horses have been killed upon it, as witnessed by one of the drivers of an Islington omnibus.

A more recent application of the same asphalte in the Walworth-road seems to have suffered much by the continuous rain, and large broken-up spaces are undergoing repair.

There is also a length of the same asphalte running through Leicester-square and Cranbourne-street, upon which innumerable horses have been seriously injured, so much so, that recently a large printed circular was posted in most of the shop-windows, calling a meeting of the parishioners to petition for its removal through the falling off of the business of the shopkeepers, orders having been known to have been given to coachmen not to pass over it, and policemen have been stationed to warn drivers to pass steadily over it.

Apart from the want of durability in the material, it is painful in the highest degree to witness the sufferings horses endure when they fall, as they are constantly doing upon the asphalte, many of which fall for the last time, as instanced frequently in Cheapside and Holborn. The climate of London is altogether too moist for the adoption of asphalte for roadways unless some new method of application can be devised.

A. B. C.

THE REPORT UPON THE LIVERPOOL EXHIBITION OF PICTURES.

THE Fine Arts Committee of the Liverpool Corporation have reported the results of the late Autumn Exhibition of Pictures at the Free Library and Museum, and the report has been adopted by the Library and Museum Committee. The Exhibition was opened to the public from 4th September to 18th November during the day at a charge of 1s., and from 16th October to 18th November during the evening at a charge of 6d. The number of admissions by payments at the door amounted to 22,725, besides 313 season tickets, and about 6,000 pupils of educational establishments admitted gratuitously. The number of works exhibited consisted of 430 oil colours, 450 water colours, 18 pieces of sculpture, 10 other works of art, forming a total of 908. Of these, 832 were for sale, and 235 were actually sold for sums amounting to 6,395*l.* 2s. 6d., of which pictures to the extent of 1,377*l.* were purchased by members of the Town Council, exclusive of 500*l.* expended by the Corporation in pictures for the permanent Gallery of Art now in course of formation. The total receipts amounted to 1,481*l.* 9s. 8d., leaving a profit of 600*l.* 6s. 8d. It is contemplated to devote the surplus of these exhibitions to the purchase of pictures for a permanent Gallery of Art. If, as seems probable, says the report, the popular taste can be thoroughly roused and stimulated by such exhibitions, public bodies may then feel themselves justified in employing painting as an adjunct to architecture, and a revival of fresco paintings in our municipal buildings may take place.

* Walking through Cheapside this day (January 29th), between twelve and one o'clock, I saw no less than seven horses down. One of these poor creatures had its off hind leg completely broken, the skin ripped asunder, and the bone protruding,—a most painful sight to behold. A misty rain had just commenced to fall, which rendered the surface of the asphalte as slippery as a sheet of glass or ice.

ADVERTISING FOR TENDERS.

CHELSEA.

IN the Chelsea Vestry the following tenders for the construction of a sewer in Glebe-place and Cook's-ground, King's-road (758 ft. in length, and 3 ft. 9 in. by 2 ft. 6 in.), were considered. Mr. Steggles, Napier-road, Kensington, 720*l.*; Mr. Keble, Stanhope-terrace, Regent's-park, 563*l.*; Mr. Pizzey, of Battersea, 499*l.* 15s.; Mr. Bloomfield, Totteridge, 700*l.*; Mr. Wigmore, Walham-green, 749*l.* 10s.; Messrs. Brass & Son, Manor-street, Chelsea, 800*l.*; Mr. Whittick, 720*l.*; Mr. Hubbard, 750*l.*; Mr. Neave, 706*l.* Mr. Davidge called attention to the fact that the lowest tender was 499*l.* 15s., and the highest 800*l.* Mr. Fisher proposed to accept the tender of Mr. Neave, and Mr. Symons seconded. Mr. Kingsbury thought the vestry should be consistent. When it was proposed to advertise in the local papers, it was suggested such a course would be found needless, as it would be sufficient to write to builders in the parish; but the vestry decided to advertise in other papers, and he would move to take the tender of Mr. Keble. This being put, ten voted for it, and ten against it. The chairman called for a division—for the amendment, 9; against it, 11. Mr. Neave's tender was accepted.

Books Received.

Sun Pictures. With Descriptive Letterpress. London: Sampson Low & Co. 1872.

UNDER this title we have twenty reproductions by the Heliotype process, of specimens of different branches of ancient and modern art,—oil paintings, engravings, and sculpture. By this process mounting is superseded,—an important point in book illustration,—and permanence secured. Of the merit of some of these reproductions,—the Vandyck portrait, for example,—we spoke when they originally appeared in *Art*. The collection makes a most charming volume, and is appropriately dedicated to H.R.H. the Princess Louise, whose elegant crayon "Portrait of a Canadian Lady" is the subject of one of the illustrations. "The Jeweller of St. Petersburg," by Mr. W. Cave Thomas, is one of the most striking prints in the book.

The City of London Directory for 1872. Collingridge, "City Press" Office.

WE gave our praise to the first issue of "The City of London Directory," and find it even more fully justified by the second, now before us. The work has been revised from information obtained by house-to-house call, and the corrections and business changes at Christmas are noted. It includes a good map of the City, on which the improvements during the year are marked. The lists show that there are within the City boundaries 270 architects and 366 surveyors. Prodigious! The list of surveyors, however, includes, of course, some of the names in the other list.

Examples of English Mediæval Foliage, taken from Buildings of the Twelfth to the Fifteenth Century. By JAMES K. COLLING, F.R.I.B.A. London: Published by the Author, 150, Hampstead-road.

THE previous work by Mr. Colling, "Art Foliage," in which he gives an analysis of geometric form, with a series of original designs for foliated enrichments, as well as studies from natural foliage, is well known and esteemed. In the present work he proposes to give a carefully-selected series of actual examples of art foliage, drawn from English Mediæval buildings, "to illustrate the most successful treatment of the various types of conventionalised natural forms in sculpture and painting," and he proposes to arrange them so as to show the progress of ornamentation and decoration. The first part, now before us, contains twenty plates, and gives promise that the author's programme will be well carried out.

Tables for Platelayers. By WILLIAM DONALDSON, M.A., A.I.C.E. London: Spon.

THESE tables are compiled from the formulæ of the work on "Switches and Crossings," by the same author, and lately noticed in our columns. The tables, relating to various gauges, single and mixed, are preceded by an explanation. The volume must be a useful one to platelayers: it is cased in stout boards, and can be opened without breaking the back of the book, which is what cannot be said of every volume nowadays.

VARIORUM.

CASSELL'S "Illustrated Travels" for February thus sketches Salonica:—"As the boatmen rowed us to the shore the charms of the panorama which we had been contemplating gradually disappeared; instead of the whitewashed walls, the towers, and the evergreens, we were struck with amazement at the desolate aspect of this once famous town, and the miserable appearance of its inhabitants. The two colossal towers which stand on the beach are queer specimens of military architecture; their bases are of cyclopean proportions, but their casemates are made of a strange composition of broken columns, stones, bricks, and mortar, all hashed up together. Their embrasures, and the guns inside them, were very shabby indeed; they looked as tame and harmless as the jaws of an old lion who has not a tooth left to bite with would be."——A new edition of Bret Harte's "Luck of Roaring Camp, and other Tales," will shortly be issued by Messrs. Routledge & Sons, with two additional papers, not hitherto published in England, and with an Introduction and "Gossiping Glossary," by Tom Hood.——The current number of the *Leisure Hour* says as to some relics of James Watt,—"We learn from James Gibson Watt, esq., the great-grandson of the immortal inventor, that some most interesting relics of Watt are still at Heathfield, in the very room next his bedroom, in which he worked till within a few weeks of his death, and which it would seem has never been entered since then, save on one or two very special occasions: there stands the lathe at which he was last at work, covered with chips; his tools, many of them his own inventions, just as he left them; his copying or diminishing machine, and some little works of art which he left unfinished. Watt's 'Parent Engines,' the improved 'Newcomen' or 'fire-engine' of the old pattern, and the 'Sun and Planet' engine, which contains the germ of all modern improvements except the crank, are in the South Kensington Museum, and are among the most precious things in the whole collection; other valuable relics of Watt are there also, and there Mr. James Watt tells us the relics now at Heathfield may eventually be deposited."——*Old Merry's Monthly*, illustrated (Warne & Co.), is a magazine quite after a boy's own heart.——*The Family Friend* (Partridge & Co.) and *The Children's Friend* are both remarkable for the goodness of the woodcuts with which they are illustrated, at an almost nominal price.——"The Perpetual Cross Calendar. By C. J. Recordon, B.A., of Pembroke College, Cambridge. Trübner & Co., London." The object of the author of this calendar has been to reduce the complete calendar of each year to its smallest possible compass. Each of the fourteen accompanying diagrams can be cut out, pasted on board, and hung up for ordinary use. It can also be engraved on a sufficiently small scale, in order to be placed in a watch-case. It could be applied to one of the faces of a church-tower. In this case the calendar should be made movable, so that every year the order might be changed to suit the case: thus a *perpetual* public or tower calendar would be secured.——"The Prince's Illness: its Lessons. A Lecture on the Prevention of Disease. By B. W. Foster, M.D., Birmingham. Churchill, London." This lecture was delivered to a popular audience in Birmingham last December. It is intended to show how greatly zymotic diseases may be diminished by simple sanitary precautions. There is nothing particularly new in it, but repetition is desirable.——"The Drama in England" is treated of in the current *Quarterly*, and makes a very interesting article. The writer warmly advocates the scheme we have at heart for the establishment of a theatre in London not wholly dependent on the popular taste of the hour and where intellectual stimulus and refreshment may be looked for,—a theatre commensurate with the culture of the age. The writer takes the same view as to the *modus operandi* as was taken by Mr. Godwin in his initiatory observations on the subject, and thinks such

a theatre might be founded by means of a *guarantee* similar in principle to that under which our two Great Exhibitions were constructed.——Mr. J.W. Anson's little "Dramatic Almanack for 1872" includes some "Reminiscences of Astley's." The Graphotyping Company ought to be able by this time to do something better than the portrait of the editor given in the Almanack.——We have received a copy of Mr. E. M. Barry's pamphlet in reply to Mr. Street's statement, but too late for consideration this week.

Miscellanea.

Mr. E. M. Ward's "Luther's First Study of the Bible."—We are glad to hear that an endeavour is being made to purchase, by subscription, this fine and interesting picture, exhibited at the Academy in 1869, for presentation to the British and Foreign Bible Society. A committee is now at work for promoting the object; it contains the names of numerous gentlemen whose influence, it may be hoped, will do much towards bringing the matter to a successful issue. Included in the list we find Sir Thomas Gabriel, Messrs. G. Moore, W. Leaf, W. Morley, F. Bennoch, J. and F. Battam, A. Holtz, W. F. White, T. Walker, W. S. Silver, S. R. Ward, J. M. Stead, Major-General White, Colonel Worsley, Captain Bedford Pim, R.N., Rev. Josiah Pratt, Rev. F. C. Lloyd Jones, Rev. W. Windle, Rev. J. V. Povah, and others. The price of the picture is 1,000*l.*, of which one gentleman, by his own individual efforts, has succeeded in obtaining 200*l.*; and the artist himself presents a similar sum to the society. We sincerely hope the whole amount will soon be collected, and that the picture will thus find an appropriate home. Members of the society should interest themselves in it.

Wooden Pavement.—By the sanction of the Commissioners of Sewers a new principle has been lately introduced, and is now on its trial at the south end of Bartholomew-lane. The pavement is constructed of wood. It is laid on a bed of sand, of sufficient depth to form a good grade, say from 1 in. to 2 in.; on that a flooring is placed, which consists of two thicknesses, one laid horizontally, the other transversely, each thickness consisting of a $\frac{3}{4}$ in. board, prepared with tar. Upon these boards blocks of wood measuring 9 in. by 3 in. by 5 in. are placed, and between each row of blocks a strip of wood 1 in. by $\frac{3}{4}$ in., is nailed to the flooring, the object being to steady the blocks in their places during construction; after being thus laid, the spaces or joints are filled with hot gravel, upon which hot tar or pitch is poured. This is rammed tight home, and again repeated until the spaces are filled up. Subsequently another application of tar is made over the surface, on which a dressing of fine gravel is thrown: when dried the pavement is complete.

The Genius of Michelangelo.—Hawthorne, in his "Notes," says, speaking of the statues by Michelangelo on Giuliano de Medici's tomb in St. Lorenzo at Florence,—"The statue that sits above these two latter allegories, Morning and Evening, is like no other that ever came from a sculptor's hand. It is the one work worthy of Michelangelo's reputation, and grand enough to vindicate for him all the genius that the world gave him credit for; and yet it seems a simple thing enough to think of or to execute merely a sitting figure, the face partly overshadowed by a helmet, one hand supporting the chin, the other resting on the thigh. But after looking at it for a little time the spectator ceases to think of it as a marble statue; it comes to life, and you see that the princely figure is brooding over some great design, which, when he has arranged it in his own mind, the world will be fain to execute for him. No such grandeur and majesty have elsewhere been put into human shape. It is all a miracle,—the deep repose, and the deep life within it. It is as much a miracle to have achieved this as to make a statue that would rise up and walk."

Dyson's Diamond Stall Plates. — The "Diamond Stall Plates," for shop-fronts, registered by Messrs. Dyson & Co. have advantages of their own. The letters are silvered by a patent process on a bronze plate, and they require less cleaning than some other plates do.

Technical Education and the Nine Hours Movement.—On Monday evening a large public meeting of cabinet-makers, carvers, and chair-makers, was held in the Motley-street School-room, Shoreditch, for the purpose of establishing drawing-classes in connexion with the department at South Kensington. Mr. Benjamin Lucraft (of the London School Board), occupied the chair. He said that one of the largest employers of labour in the trade had voluntarily reduced the hours of labour to 52 hours a week, and he had not the least doubt but the nine hours movement would become general. He urged the importance of young men turning this leisure to their own educational advancement, so that men should not say a reduction in the hours of labour had only given them more time for drinking and idle amusements. Mr. Buckmaster then addressed the meeting on the advantages which a knowledge of drawing gives to working men. Several working men spoke in favour of the establishment of drawing-classes; a large number gave in their names; and classes will be commenced at once.

The Royal Historical and Archæological Association of Ireland.—The annual meeting of this association (originally the Kilkenny Archæological Society) was held Jan. 17, the Mayor in the chair. The Rev. J. Graves, hon. sec., read the report of the committee for the past year, after which it was unanimously resolved,—"That, in order to improve the museum and library of the society, and to render it more interesting to the public, subscriptions be requested from the gentry of the county and the citizens of Kilkenny, for the purpose, particularly as it is the intention of the committee to open the institution to the public; also that a sub-committee be appointed to carry out the necessary arrangements." It was arranged that the sub-committee consist of the Rev. Mr. Graves, and Messrs. Prim, Robertson, and J. L. Ryan. The treasurer reported favourably on the financial condition of the association. Twelve new members were elected, and two members advanced to fellowships. Various presentations were made, and interesting objects exhibited.

Public Park for Ashton.—A few months ago Mr. H. T. Darnton, solicitor, purchased the Highfield estate, on which is erected a large mansion. The house and grounds cost 16,000*l.* Wishing to promote the establishment of a public park for the inhabitants of Ashton, Stalybridge, Dukinfield, Mossley, and the neighbourhood, Mr. Darnton offered the whole estate to the public for 2,000*l.* The late Mr. Samuel Oldham has already bequeathed a sum of 7,000*l.* to maintain a public park, and Lord Stamford came forward and offered to forego the chief rent on the Highfield estate, amounting to 131*l.* per annum, if it was converted into a place for the recreation of the working classes. A number of subscriptions were collected. Lord Stamford has now further offered also to give twenty-four acres of adjoining land absolutely, on the condition that a sum of 10,000*l.* be raised by public subscription during the present year for the purpose of buying Mr. Darnton's interest and laying out the park and communications.

Demolition of Radley's Hotel, New Bridge-street.—This well-known establishment in New Bridge-street, Blackfriars, is about to be taken down, and buildings of another character erected on the site. An announcement of the sale of the materials of the building has for some time been before the public, and the sale was to have taken place on Tuesday last, at one o'clock, at which hour there were not less than from 250 to 300 persons present connected with the building trade. When, however, the auctioneer, Mr. Glaisher, made his appearance, he somewhat surprised the company by the intimation that he had been desired at the last moment, by the Governors of the Bridewell Hospital, to postpone the sale for a month, in consequence of unforeseen arrangements in connexion with the Queen's visit to the City on the approaching Thanksgiving-day. After the display of some little opposition, the postponement was ultimately agreed to.

Clerk of Works for the Sheffield School-board.—Mr. W. H. Parsons has been appointed clerk of works to the Sheffield School-board, at a salary of 2*l.* 12s. 6d. per week, subject to one month's notice on either side, and that he be required to devote the whole of his time to his duties, under the direction of the surveyor to the Board.

Market Accommodation in the City.—At a recent meeting of the Court of Common Council the Markets Improvement Committee brought up a report as to the best mode of utilising the vacant land at the western end of the Metropolitan Meat and Poultry Market, in Smithfield, and on the northern and southern sides of Charterhouse-street, and submitted designs and estimates for the erection of an additional market on that site at an estimated expense, exclusive of the value of the land, of 87,500*l.* The consideration of the report, from the importance of the question at issue, was postponed, in order that it might be circulated among the members, but it will most likely be discussed at the next meeting.

The Lyons Exhibition. — On Monday a committee meeting was held at the Mansion-house, under the presidency of the Lord Mayor, for the purpose of considering the best means to be taken to insure the proper representation of the United Kingdom at the International Exhibition of Agricultural and Industrial Products and Works of Art, to be held at Lyons from May to October next. It was announced that the Minister of Agriculture and Commerce, under whose patronage the Exhibition was to be held, had promised that the French Government would furnish the medals to be awarded by the international juries, and that the committee of organisation at Lyons would defray the expenses of the London committee to the extent of 6,000 francs.

A Group of Sculpture for Ober Ammergau.—A letter from Munich says that the King of Bavaria, who was present last autumn at the representation of the Passion Play at Ober Ammergau, has determined to erect on the Pelberg, above Kofel, which commands the entire district, a colossal group in marble representing Christ at the moment when he said, "Behold thy mother," "Behold thy son." The execution of this group has been entrusted to Professor Halbig. The figures are to be 10 ft. or 11 ft. in height, and the height of the whole group will be from 36 ft. to 40 ft.

Extensions at the Blackfriars Metropolitan Railway Station.—During the present week alterations of an extensive character, which commenced a few days ago, have been going forward at the Blackfriars Station of the Metropolitan District Railway. We understand that the upper portion of the station, above the booking offices, is intended to be applied to the purposes of an extensive hotel or restaurant, and with this view three stories above the present ground floor of the station are now in course of erection extending to the entire length of the existing structure.

Coating with Zinc. — According to M. Böttger, copper or brass may be given a firmly adherent zinc coating, by the following method: Finely divided or powdered zinc, in a non-metallic vessel, is covered with a concentrated sal-ammoniac solution; this is heated to boiling, and the articles of copper or brass, properly cleansed, are introduced. A few minutes suffice to produce a firm and brilliant coating. The requisite fineness of the zinc is produced by pouring the molten metal into a mortar and triturating the same until it solidifies.

The Cathedral Restoration, Chichester. This work still goes on. The Lady Chapel is completed, with the exception of the paving and carving of the bosses, &c., of the sedilia and piscinæ. It is understood that the paving, which is to be of a handsome pattern, is in the hands of the manufacturer. The chapel, when completed, will probably be used for the early morning service of the Theological College. The latest work undertaken is to pave the south transept with Portland stone and Purbeck marble.

Argyll-street Galleries. — A considerable *suite* of rooms in Argyll-street, Regent-street, has been opened as a "permanent exhibition of pictures," with a view to sale. The collection includes the large painting by Jacques Louis David, — "The Coronation of the Emperor Napoleon Bonaparte in the Cathedral of Notre Dame." Mr. W. Harris is one of the secretaries.

The Joiners and Technical Education.—The Joiners' Company has placed at the disposal of the Birkbeck Literary and Scientific Institution, Southampton-buildings, three prizes for the encouragement of technical education.

The Invention of Steel Pens.—Mr. Henry Mitchell writes to a Birmingham contemporary:—The remarks which have appeared in the local papers upon the death of Mr. Joseph Gillott, that "the adaptation of machinery to the manufacture of metallic pens" was his invention, lead the public to wrong conclusions. It is due to the memory of my late father, John Mitchell, that I should state that he not only made steel pens, but used machinery in their production, for some time before Mr. Gillott commenced in that branch of business.

Material for Roofing.—According to the invention of Mr. J. Erichsen, of Copenhagen, best quality pasteboard is boiled in anhydrous coal-tar, limmer asphalte, powdered silicate of soda and potash, and liquid flint, or other silicious soluble earth. It is then passed through rollers, then sanded, and then rolled again. When fastened to the boards it is coated with Erichsen's India mastic, consisting of anhydrous coal-tar, limmer asphalte, Portland cement, Farnham rock, or other soluble silicious earth, all boiled together and well stirred.

Opening of an Oddfellows' Hall, Bristol. The erection of the Oddfellows' Hall in Rupert-street is completed, and its opening has been celebrated by a banquet in the new building. The hall has cost, including the money paid for the site, about 2,000*l.* It has been erected from designs by Mr. Harford, of Lower Ashley-hill; the builder being Mr. James P. Stephens. The style is Italian, and the material used in the exterior work Pennant stone, with freestone dressings. The building is an ornamental one, and is to be used for lodge meetings and other purposes.

A Deep-water Dock for Hartlepool.—A deputation from the Hartlepool Port and Harbour Commissioners attended the last fortnightly meeting of the North-Eastern Railway directors, at York, for the purpose of pressing upon them the immediate necessity of affording increased dock, quay, and railway accommodation for the Hartlepools, particularly the urgent necessity for a deep-water dock. The chairman of the Board informed the deputation that the directors are willing to carry out the entire scheme as proposed by their engineer.

The London Carpenters.—A preliminary meeting of the carpenters of London was held on Wednesday in last week, at which it was resolved to call an aggregate meeting of the trade to consider the propriety of memorialising for the nine hours system, to commence from the 1st of July; the notice thus to expire at the same time as that of the masons, so that if there is a strike or lockout they may not have to undergo the inconvenience of two agitations in the building trades at different times.

New Docks at Milford Haven.—A movement has been started for the purpose of constructing docks at Milford, of such a size as will provide accommodation at neaptides for a class of vessels similar to the new steamers belonging to the National Steamship Company. It is stated that vessels of this class could make to New York two more voyages per annum from Milford than from Liverpool. The cost, as estimated by Mr. Hamilton Fulton, the engineer, is about 600,000*l.*

St. James's Park.—Rumours are again rife with respect to an intended encroachment by the Government on the grounds of the St. James's Park. It is said, that in order to construct the new Admiralty and War Offices, necessitated by the changes which the present Administration has effected, the Government propose to take a slice off the park, near where the wooden cannon stands, in the rear of the Horse Guards.

Brampton New Workhouse. — A considerable time has now elapsed since the guardians purchased a small field whereon to erect a new workhouse and the usual adjuncts. Plans were advertised for, and the most approved sent for the inspection of the Poor Law Board in London. The central authority suggested a few alterations, and these having been completed tenders will soon be invited for building.

Thanksgiving-day in St. Paul's. — The tradesmen of Ludgate-hill have resolved upon joint action with a view to decorate that thoroughfare in a manner worthy of the occasion on the approaching visit of her Majesty to St. Paul's. They should obtain the best availabl e artistic advice.

The Savoy Chapel, London.—A painted window, which has for the ast few weeks been in course of construction at the Chapel Royal, Savoy, has been opened. The gift is an anonymous one, the donor, however, being a member of the congregation. The window is situated on the north side of the church, and is divided into six compartments, the upper three representing the birth, and the lower the baptism of Jesus. The window is the work of Messrs. Clayton & Bell, of Regent-street, and makes the fifth painted window presented to the chapel, that in the east being the gift of her Majesty; and it is expected that a sixth will shortly be erected.

Sale of the Grosvenor Mansions.—The large building known as the Grosvenor Mansions, situate in Victoria-street, Westminster, let out in suites of chambers, &c., producing a rental of 3,000*l.* per annum, was sold by auction, by Messrs. Chinnock, Galsworthy, & Chinnock, on the 25th January, and realised the sum of 49,500*l.*

Mr. Scott.—Mr. George Gilbert Scott, jun. M.A., has been elected a Fellow of Jesus College, Cambridge. Mr. Scott is a son of Mr. George Gilbert Scott, architect. He graduated in 1866 as senior in the Moral Science Tripos. In 1868 he obtained the Burney Prize. In 1870 and 1871 he acted as one of the examiners for the Moral Science Tripos.

The Vienna Exhibition, 1872.—The pile-driving for the foundation is proceeding rapidly, sixteen rams being at work, and having fixed 224 piles in one day. Tenders will be received shortly for the carpenters' work, constituting the skeleton of the Palace, the Arts Exhibition, the Commissariat, the telegraph, post, &c.

Victoria Park.—The Government has consented to an agreement with the Metropolitan Board of Works, by which the thirty acres of Victoria Park which were in jeopardy will now be secured to the use of the public.

The Public Hall, Dorking.—The works are being pushed on by the contractor. The large hall is about ready for the roof. The alterations to the existing building are also being rapidly executed

Newspaper Press Fund.—The annual general meeting of this institution will be held on Saturday, the 24th inst. The Duke of Argyll will preside at the anniversary dinner, on the 11th of May.

Town Tramways for Sheffield.—The Sheffield Town Council have resolved to construct street tramways on their own account, the offer of a private company having been rejected.

Society of Female Artists.—The annual exhibition of works by female artists will be opened to the public on Monday, the 5th inst.

The Royal Academy.—Sir John Gilbert and Mr. Richard Norman Shaw have been elected associates of the Royal Academy of Arts.

The Leominster and Kington Line at Presteign.—The contract amount, we are told, is 30,000*l.*, not 23,000*l.*

Erratum: the "Standard" Office New Buildings. — We are informed that Messrs. Jackson & Shaw were the contractors for the work, and not Mr. John Anley.

TENDERS

For alterations to Lower House, West Hill, Wandsworth, for Mr. W. M. Seaman. Mr. T. H. Vernon, architect. Quantities supplied by Messrs. Mann & Saunders:—

	Credit.	Not deducting Credit.
Mitchell	£100	£5,200
Sprake	227	4,822
Sutton	80	4,490
Parsons	105	4,302
Stimpson	250	4,439
Adamson	325	4,435
Scrivener & White	106	4,034
Fish	—	3,950

For additions to mansion at Cockayne, Hatley Park, Bedfordshire. Messrs. Wm. M. Teulon & Cronk, architects:—

Twelvetrees (accepted)	£1,950 0 0

For gate-lodge at Biggleswade, Bedfordshire, for Mr. E. H. Adcock. Mr. T. N. Kemp, architect:—

Kidd	£344 0 0
Smith	332 0 0
Twelvetrees (accepted)	322 0 0

For new infirmary and infectious wards to the Union, Great Dunmow, Essex. Mr. F. Chancellor, architect:—

Glasscock	£4,500 0 0
Cornwell	3,971 0 0
Gozzett	3,871 0 0
Cole (accepted)	3,390 0 0
Parmenter	3,287 0 0
Saul	3,200 0 0
Brown	3,180 0 0
Hull	3,061 0 0

For Wesleyan chapel, near Boston, Lincolnshire. Exclusive of old materials in present chapel. Messrs. Bellamy & Hardy, architects:—

Brown & Co.	£889 0 0
Hobson & Co.	873 0 0
Cook	824 5 3
Lee (accepted)	735 0 0

For the erection of a Wesleyan chapel, Prince of Wales-road, N.W. Mr. E. Hoole, architect. Quantities by Mr. S. J. Thacker:—

Dove, Brothers	£5,275 0 0
Booth	5,000 0 0
Myers & Son	4,959 0 0
Henshaw & Co.	4,930 0 0
Jackson & Shaw	4,848 0 0
Hobson	4,828 0 0
Wright	4,650 0 0
Killby	4,577 0 0
Niblett & Son (accepted)	4,490 0 0

For the erection of new public baths, Burton-on-Trent. Messrs. Thompson & Young, architects:—

Upton	£6,000 0 0
Hadfield	5,950 0 0
Hadfield	5,891 10 0
Maddocks	5,850 0 0
Clarke	5,747 0 0
De Ville	5,650 0 0
Chamberlain	5,620 0 0
Wileman	5,595 0 0
Mason	5,550 0 0
Lowe & Sons (accepted)	5,533 0 0
Bowler & Beck	5,530 0 0

For altering and finishing a house in Windmill-street, Haymarket, in connexion with the Royal Pavilion Music-hall. Mr. Frederick Sullivan, architect:—

Potter	£1,180 0 0
Badcock	1,034 0 0
Hawkes (accepted)	999 0 0

For the supply, delivery, and fixing of bridge ironwork for the Hedingham Highway Board. Mr. E. R. Boulter, architect:—

Tillott	£475 0 0
Hill & Smith	472 10 6
Symington	459 0 0
Worcester Engine Works Co.	403 0 0
Horseley Co.	400 0 0
Head	391 18 6
Coulthard (accepted)	380 0 0

For alterations, &c. to the "Coach and Horses," Lower Sloane-street, Chelsea, for Mr. J. G. Poole. Mr. John Bradbury, architect:—

Buckley	£230 0 0
Jones	190 0 0
Sawyer (accepted)	174 0 0

For the construction of sewers in Edith-grove, Chelsea. Mr. Pattisson, surveyor:—

Whittick	£335 0 0
Brass & Son	323 0 0
Hubbard	320 0 0
Neave	309 0 0
Bloomfield	291 0 0
Steggles	290 0 0
Keeble	283 0 0
Wigmore (accepted)	269 10 0
Warren	244 0 0
Puzzey	225 5 0

For alterations and repairs at 58, Great Titchfield-street, for Mr. Stone. Mr. W. A. Baker, architect:—

Baugh	£490 0 0
Allen	470 0 0
Watson, Brothers	463 0 0

For alterations to one house, and for finishing four carcasses, at Merton, Surrey. Mr. R. B. Marsh, architect:—

Detached House.	
Bedford (accepted)	£270 0 0
Carcasses Nos. 3 and 4.	
Groom	570 0 0
Carcasses Nos. 5 and 6.	
Dunkley & Sons	375 0 0

TO CORRESPONDENTS.

H. G. P. (send us particulars of the mode adopted).—H. A. (thanks, declined).—J. W. (our correspondent, who inquires as to claim for compensation on the Lambeth Waterworks Company, should take proper advice).—Constant Reader (right would depend on the terms of the contract. Power to omit is usually reserved).—N. P.—T. H.—Dr. M.—E. B.—J. & S.—Mrs. J. T.—C. G. & C.—P. & Co.—K. & P.—J. R. C.—J. J.—M. P.—H. P.—F.—M. O.—W. S.—H. H.—J. C. R.—S. & Co.—T. H. V.—C. C. H.—E. T—T. B.—T. P.—W. S. W.—W. S.—M. H.—A Subscriber.—W. S.—S. E. H.—E. P.—B. E. N.—S.—J. B.—E. W. H.—J. N.—G. C. (next week).—M. (next week).—F. H. (next week).

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WANTED, the SERVICES of a thoroughly efficient CLERK of the WORKS, well educated in all branches of the building trade, to Overlook Two or Three Works in the Midland Counties, with a chance of permanent employment.—Apply to H. & S. care of Mr. Derry, Stationer, Nottingham.

WANTED, a young Man, to CARRY OUT EXPERIMENTS, under direction, in TRYING MIXTURES, &c. for a patent. He must be accurate, and thoroughly trustworthy, and should have a general knowledge of mechanics.—Apply, stating previous employment, wages expected, and other particulars, to R. P. S. C. 6, Calvert-road, East Greenwich.

TO BUILDERS' FOREMEN.

WANTED, a GENERAL FOREMAN, for the Restoration of a Church, where there is a considerable quantity of oak work.—Address, by letter, stating age, terms, &c. and where last employed, to H. J. Post-office, Stoney Stratford, Bucks. Satisfactory references required.

WANTED, a PERSON of experience, to TAKE the MANAGEMENT of STEAM BOILERS, and otherwise competent to render ordinary mechanical assistance. The salary will be 30*l.* per year, with board, lodging, washing, &c. Application to be made by letter, with references, and delivered, prepaid, not later than THURSDAY next, 8th FEBRUARY, addressed W. B. WEST, Westminster Union, Clerk's Office, 2, Great Marlborough-street, Poland-street, Oxford-street.

WANTED, a MAN and WIFE, without encumbrance, ages from 35 to 45, for the BAKERS' ALMS-HOUSES, Lea Bridge-road. The man to keep the garden in front in order, the wife to keep the board and committee rooms in order, and wait on the committee when required, and to make a daily supervision of the inmates.—Further particulars may be obtained of the Treasurer, Mr. DEATH, 286, Kingsland-road, any Friday or Saturday Morning, between Nine and Ten o'clock.

BOROUGH of LEEDS.—WANTED, an ASSISTANT, in the Office of the Borough Surveyor. He must be thoroughly proficient as a land surveyor, accustomed to the use of the theodolite, and be a good mapper.—Applications, stating amount of salary required, accompanied by testimonials from professional men with whom applicant has been engaged, must be sent to my Office, not later than TUESDAY, the 6th day of FEBRUARY next. None but practical surveyors who have been engaged in town surveying need apply.—By order,

Leeds, January 19, 1872. C. A. CURWOOD, Town Clerk.

BUILDERS' FOREMAN.—WANTED, a thoroughly practical Man, as SHOP and GENERAL FOREMAN. First-class references required.—Apply, by letter only, to GEO. BAKER & SON, Stangate, Lambeth.

UPHOLSTERER'S FOREMAN WANTED.—Age, experience, salary, and general particulars, to be stated by letter to C. H. & S. 134, Oxford-street, W.

TIMBER TRADE.—WANTED, an active, energetic Man, as TRAVELLER. State last engagement and salary required.—Address, Messrs. WELLS & HARE, Timber and Slate Merchants, Chatham.

TIMBER TRADE. — WANTED, by a Young Man, with over seven years' experience in the wholesale and retail timber trade, a RE-ENGAGEMENT as CLERK. First-class references and testimonials.—Address, J. W. 4, Kempsford-gardens, Richmond-road, West Brompton, S.W.

TO ARCHITECTS' ASSISTANTS.

REQUIRED (temporarily) a first-class DRAUGHTSMAN and expeditious practical ASSISTANT, especially skilful in the planning and design of country mansions in the Italian style. It will be useless for any gentleman to apply who cannot to the fullest extent meet all the above requirements.—Address, stating age, terms, experience, and full particulars, to 959, Office of "The Builder."

TO EMPLOYERS of SKILLED LABOUR.—Several WORKMEN and PROFESSIONAL MEN, refugees from Paris, seek EMPLOYMENT, as Architects, Draughtsmen, Civil Engineers, Painters, Decorators, Sculptors in bronze and marble; Harnessmakers, Cardboard Boxmakers, Plumbers, Tailors, Dyers, Brass, Bronze, and Copper Mounters and Moulders; Coppersmiths, Bookkeepers, Professors of Languages, &c. and Clerks.—For names and addresses of any of these, apply to H. F. JUNG, Watchmaker, 4, Charles-street, Clerkenwell, E.C.

TO GAS AND HOT-WATER ENGINEERS, BELLHANGERS, &c.

WANTED, by a practical Man, a SITUATION as above. Can take charge of a small or large Job, or Piecework. Aged 29. Town or country.—Address, A. B. 18, Great Fulteney-street, Regent-street, W.

WANTED, by a BUILDER'S CLERK, aged 26, a RE-ENGAGEMENT. Well up in office work, bookkeeping, and the different tradesmen's accounts, &c. Been used to the general management of house property. Is a painter by trade. Would fill up time in shop if required. 30*s.* per week. Good references.—Address, H. 26, Ash-grove, Hackney, E.

WANTED, by a CLERK of WORKS, a RE-ENGAGEMENT. Can be strongly recommended by the highest architectural references for ability and character, and has lately made important discoveries in Building appliances, which have already been adopted by a large number of architects. Most satisfactory testimonials.—Address, 582, Office of "The Builder."

TO GASFITTERS, &c.

WANTED, by a Young Man, a SITUATION for Permanency, as GASFITTER and BELLHANGER, and all kinds of Jobbing Work. Moderate wages required.—Address, F. A. 366, King's-road, Chelsea.

TO PLUMBERS AND BUILDERS.

WANTED, by a Young Man, a Constant SITUATION as PLUMBER and GLAZIER. No objection to fill up his time in painting. Well up in closet work.—Address, H. P. 51, Blenheim-street, Cole-street, Chelsea.

TO CARPENTERS, BUILDERS, &c.

WANTED, by a Young Man, a Carpenter, of upright character, a SITUATION, either in the Office, or at the Bench. He is a good penman, expeditious at accounts, and conversant with plans, specifications, &c. Can set out work with accuracy. Age 24.—Address, J. E. 36, Gray-street, Webber-street, Blackfriars-road, S.E.

TO ARCHITECTS AND SURVEYORS.

WANTED, by the Advertiser, an ENGAGEMENT in an Architect's or Surveyor's Office in London. Has a good knowledge of surveying and designing.—Address, M. H. Post-office, Dulwich, S.E.

TO BUILDERS AND FOREMEN.

WANTED, by the Advertiser, aged 25, EMPLOYMENT in a good CARPENTER and JOINER'S SHOP. Town or country. Wages moderate.—Address, A. D. No. 7, Great Chesterfield-street, Marylebone.

TO ARCHITECTS AND SURVEYORS.

WANTED, by the Advertiser, aged 19, an ENGAGEMENT in an office of the above. Four years' experience under articles.—Address, A. F. W. care of Mr. Quilter, Architectural Association, 9, Conduit-street, Regent-street, W.

TO LANDLORDS AND OTHERS.

WANTED, by the Advertiser, a PERMANENT SITUATION as COLLECTOR, and to SUPERINTEND HOUSE REPAIRS, &c. Unexceptionable references.—Address, A. B. 119, Offord-road, Barnsbury, N.

TO BUILDERS AND ARCHITECTS.

WANTED, by the Advertiser, who has just completed a large job, a SITUATION as GENERAL FOREMAN, or CLERK of WORKS. First-class testimonials. Joiner by trade. Age 33. No objection to the country.—Address, S. M. 69, Camberwell-road, S.E.

TO PLUMBERS, GASFITTERS, AND BUILDERS.

WANTED, by the Advertiser, a SITUATION as IMPROVER to the above trades. Has also a knowledge of painting and glazing, having been three years on a large public building. Wages moderate.—Address, T. R. New Asylum, Hereford.

WANTED, by the Advertiser, aged 21, a SITUATION, as ASSISTANT CLERK in a large Builder's Office in London. Has had six years' experience in the trade, and for the last thirteen months in the office, where the highest references can be obtained. Can take out quantities, prepare drawing, &c. and can show specimens.—Address, C. 27, George-street, Portman-square.

TO BUILDERS AND OTHERS.

WANTED, by a thoroughly practical Man, a SITUATION as WORKING FOREMAN of PAINTERS. Can do graining if required. Unexceptionable testimonials. No objection to town or country.—Address, A. Z. 7, Denmark-road, Kilburn.

WANTED, by a thoroughly practical Man, Carpenter, Joiner, and Staircase Hand, aged 31, a RE-ENGAGEMENT as BUILDER'S FOREMAN or CLERK of WORKS. Good references.—Address, H. A. 27, Thorne-road, South Lambeth.

TO BUILDERS AND CONTRACTORS.

WANTED, by a thoroughly practical Man, of twenty years' experience, a RE-ENGAGEMENT as AGENT or GENERAL FOREMAN. Five years with present employers, and first-class references. No objection to go abroad.—Address, C. P. care of Mr. Green, Architectural Carver, 74, Lancaster-street, Borough-road, S.E.

TO BUILDERS, CONTRACTORS, AND OTHERS.

WANTED, by a thoroughly practical and energetic Man, BRICKWORK CUTTING or POINTING, by the Piece, or a Situation as Foreman of Bricklayers, or Charge of a Job. Thoroughly acquainted with drawings and setting out work. Good references.—Address, A. B. Sussex House, Southgate-road, Islington, N.

WANTED, by a thoroughly practical Man, aged 36, Carpenter and Joiner by trade, a RE-ENGAGEMENT as GENERAL FOREMAN (out-door). Town or country. Twenty years' good London experience. Just now completed a five years' job. First-class testimonials from last employer.—Address, O. W. 28, Matilda-street, Caledonian-road, London, N.

WANTED, by a thoroughly practical Man, a RE-ENGAGEMENT as GENERAL FOREMAN. Town or country. Carpenter and joiner by trade. Twenty-five years' good London experience. Seven years' first-rate testimonials from last employer.—Address, W. H. B. 49, Borough-road, Southwark, S.E.

TO BUILDERS, &c.

WANTED, by a respectable married Man, GENERAL HAND in the GRAINING, PAINTING, and PAPERHANGING branches, EMPLOYMENT as WORKING FOREMAN, or otherwise, or would take the work of a Builder piecework.—Address, H. E. Post-office, Ramsgate.

TO BUILDERS AND CONTRACTORS.

WANTED, by a practical BRICKLAYER, a RE-ENGAGEMENT as WORKING FOREMAN. Thoroughly understands plans and setting out, or by the Rod, Gauge-work, or Painting, piece-work. Two years and a half with last employer. No objection to a country job. Good references. Aged 32. Address, J. Y. 8, Albert-gardens, Kilburn.

TO ARCHITECTS AND SURVEYORS.

WANTED, by a good DRAUGHTSMAN, an ENGAGEMENT, in an Architect's Office, as JUNIOR ASSISTANT. Can prepare designs from rough sketches; perspectives quickly. Good colourist and penman. Four and a half years' experience. Unexceptionable references. — Address, W. G. R. No. 2, Lowndes-terrace, Knightsbridge, S.W.

TO BUILDERS AND CONTRACTORS.

WANTED, by a sober and energetic Man, a RE-ENGAGEMENT as GENERAL FOREMAN of WORKS (bricklayer by trade). Has had charge of several extensive public and private jobs. First-class references and seven years' good testimonials from last employer.—Address, H. L. 3, Anther's-cottages, Union-road, Croydon.

TO ARCHITECTS.

WANTED, by a good ARCHITECTURAL DRAUGHTSMAN, of seven years' experience, a RE-ENGAGEMENT. Well up in working drawings, &c. Good references. Terms moderate.—Address, 770, Office of "The Builder."

TO PLUMBERS AND BUILDERS.

WANTED, by a first-class PLUMBER, a SITUATION or JOB. Good references if required.—Address, E. CARTER, 96, Bayham-street, Camden-town, N.W.

TO BUILDERS AND CONTRACTORS.

WANTED, an ENGAGEMENT, by a thoroughly qualified DAY CLERK. Neat and expeditious penman, quick at accounts, and accurate at cubing, squaring, and assisting generally. Good reference. Practically acquainted with the trade. Aged 22.—Address, 271, Post-office, Red Hill, Surrey.

WANTED, a RE-ENGAGEMENT, in a London ARCHITECT'S OFFICE. Perspective, detail, working, contract, and competition drawings, and usual office duties. Fair colourist.—J. T. B. 5, Grove-place, Bedford.

TO BUILDERS AND CONTRACTORS.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN. Town, country, or abroad. Carpenter and joiner by trade. Aged 45. First-class references and testimonials.—Address, X. Y. 4, Hartland-place, N.W.

TO ARCHITECTS AND SURVEYORS

WANTED, a RE-ENGAGEMENT, by a Young Man. Is a neat draughtsman, understands surveying, can prepare drawings from rough sketches, and assist in taking out quantities.—Address, S. R. 30, Arlington-street, Regent's Park, N.W.

WANTED, a RE-ENGAGEMENT, as SHOP FOREMAN, OUT-DOOR FOREMAN, or CLERK of WORKS, by a thoroughly practical London Builder's Foreman. Joiner and Staircase-hand by trade. Aged 34. Good draughtsman, and well up in piecework and machinery of all kinds. No objection to fill up time in the office. First-class testimonials from London Architects and Builders.—Address, H. K. 41, Matilda-street, Caledonian-road, N.

TO ENGINEERS OR CONTRACTORS.

WANTED, a RE-ENGAGEMENT, as CLERK, or INSPECTOR of WORKS, or GENERAL FOREMAN, having had twenty years' experience upon large works, having just completed a large contract in the City. Country not objected to. With first-class references from last and previous employers.—Address, B. H. 22, Great New-street, Fetter-lane, Holborn, E.C.

TO PLUMBERS OR GASFITTERS.

WANTED, a SITUATION, in Town or Country, by a respectable Young Man, aged 20, as IMPROVER in the above line, to a good master. References of three years' standing.—Address, G. G. P. 26, College-street, Chelsea, S.W.

TO BUILDERS, SURVEYORS, AND OTHERS.

WANTED, a SITUATION, by a practical CLERK, aged 28. Is well acquainted with estimating, quantities, measuring works, and keeping accounts.—Address, A. B. 171, Blackfriars-road, S.E.

TO BUILDERS, CARPENTERS, AND OTHERS.

WANTED, a SITUATION, by a good CARPENTER and JOINER. Highest References. Wages moderate.—Address, G. R. 26, Joseph-street, Burdett-road, Bow, E.

TO BUILDERS AND CONTRACTORS.

WANTED, a SITUATION, as CLERK, capable of managing a branch business. Has just completed an engagement with a first-class contractor as managing agent.—Address, A. B. C. 2, Villas on the Heath, Hampstead, N.W.

WANTED, a SITUATION, by an experienced Man in STAIRS, SHOP-FRONTS, Boxing Shutters, Sashes, and Frames, the Building Alterations. Can take charge of a job or country job. Can make out working drawings and measure up work. Wages 6½d. per hour. Aged 50.—Address, T. T. 19, Newstreet, Kennington-park-road.

TO BUILDERS AND CONTRACTORS.

WANTED, a SITUATION, in Town or country, by a Young Man, who is a good DRAUGHTSMAN, Well up in builders' accounts, quantities, measuring, estimating, &c. Practically acquainted with the trade and setting out all kinds of work. Terms moderate. First-class refeoences.—Address, N. Y. T. Post-office, Woodstock, Oxon.

TO BUILDERS, CONTRACTORS, AND OTHERS.

WANTED, by a good practical MASON, a RE-ENGAGEMENT as FOREMAN, or Work by the Piece, labour only. Town or country.—Address, R. N. 6, Norwich-road, Dalston.

TO BREWERS AND ADVERTISING WRITERS.

WANTED, by an experienced Workman, a SITUATION, as SIGN WRITER. Good references, if required.—Address, R. S. Post-office, Old Ford, E.

TO ARCHITECTS.

WANTED, by an experienced ASSISTANT, a RE-ENGAGEMENT. Can prepare competition, working, and detail drawings, perspective, and a good colourist. Town or country. Temporary or otherwise. Aged 28.—Address, H. G. 42, Goldney-road, St. Peter's Park, Harrow-road.

TO BUILDERS, SURVEYORS, AND OTHERS.

WANTED, by an experienced BUILDER'S SURVEYOR, well up in taking off and preparing quantities, measuring and estimating, accounts, extras and omissions, &c. an ENGAGEMENT, for about three days a week; or to take the above from any firm on moderate terms.—Address, X. Y. Z. 23, Everett-street, Russell-square, W.C.

THE Advertiser, a good DRAUGHTSMAN, COLOURIST, and DESIGNER, wishes EMPLOYMENT. Has had considerable practical experience in bridge building, surveying, &c. No objection to go abroad. Having a few hundred pounds capital would join an architect or builder already established in a good business.—Address, ALPHA, 261, Tottenham-court-road.

TO BUILDERS AND CONTRACTORS.

THE Advertiser desires an ENGAGEMENT in a large Firm as ESTIMATOR, MEASURER, and BOOK-KEEPER. Is thoroughly practical, quick, accurate, and can be well recommended both as to character and ability.—Address, C. R. J. No. 10, Trinity-square, Borough, S.E.

TO BUILDERS AND CONTRACTORS.

THE Advertiser, who has a thoroughly practical knowledge of the trade, requires an ENGAGEMENT as MANAGING CLERK. Can take off quantities, estimate, and measure and value all works connected with the business. First-class references.—Address, "290," 24, Kingsland High-street.